VOLUME LVIII NUMBER ONE

THE NATIONAL GEOGRAPHIC MAGAZINE

JULY, 1930

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PUBLISHED BY THE
NATIONAL GEOGRAPHIC SOCIETY
HUBBARD MEMORIAL HALL
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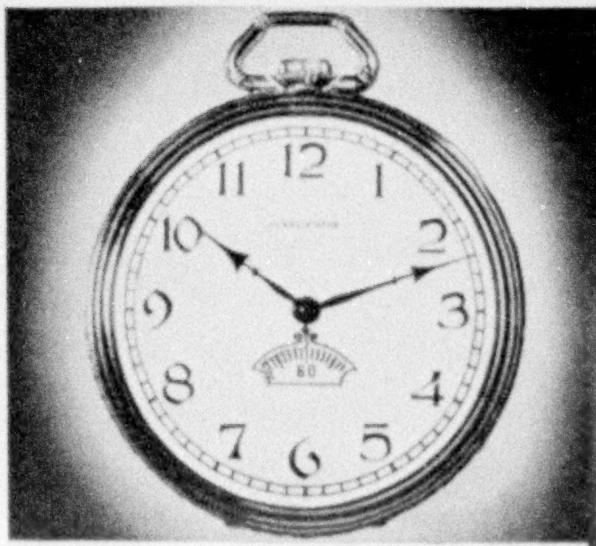

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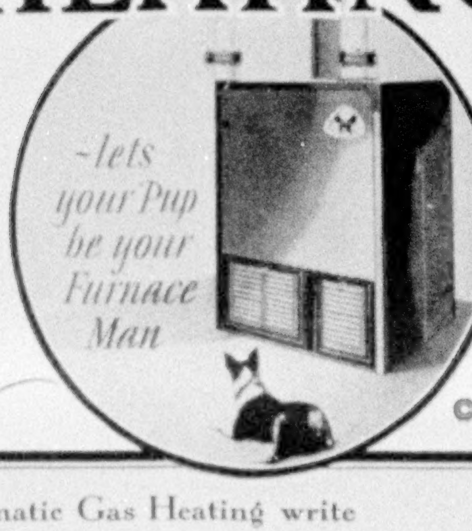

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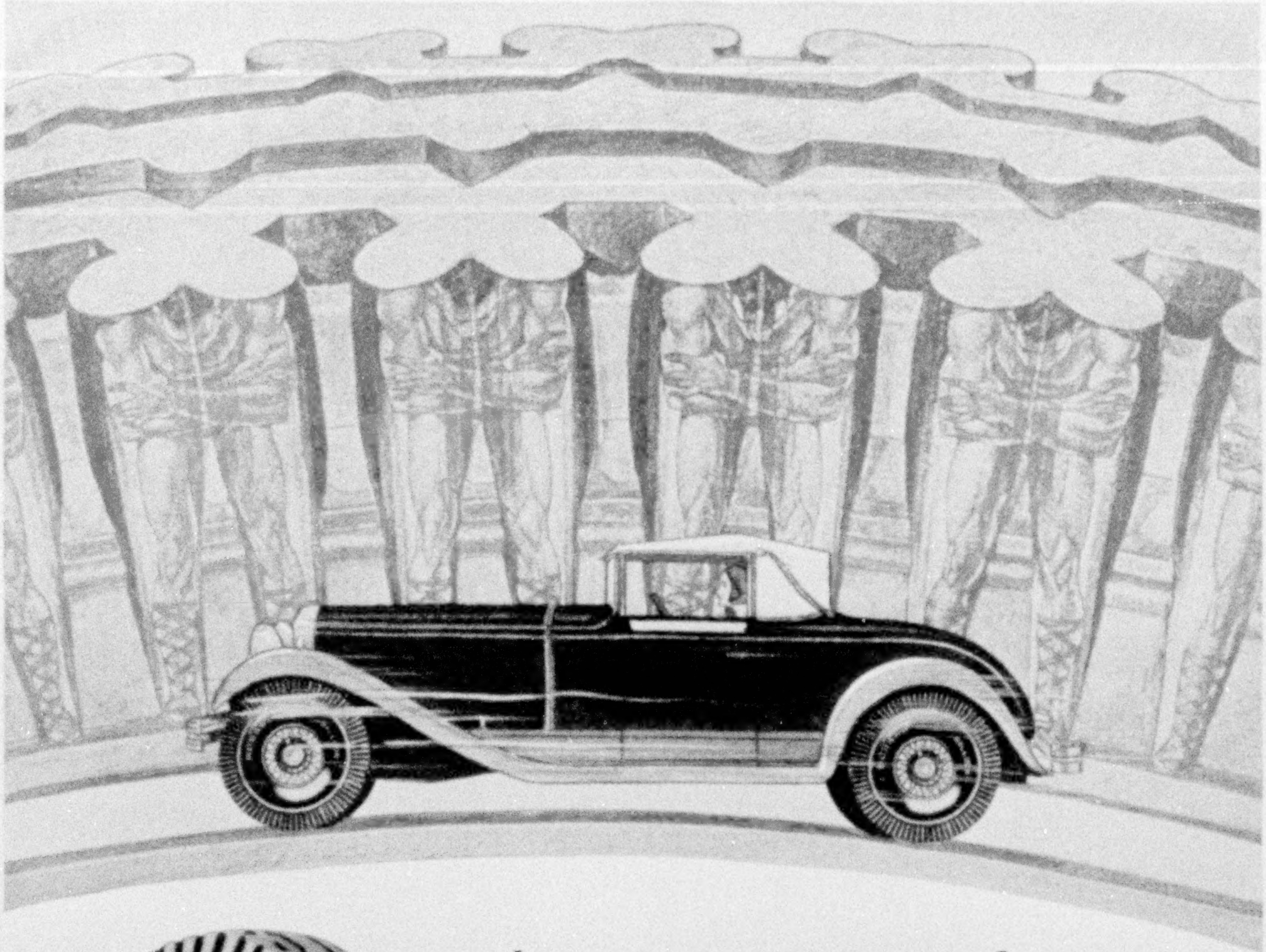

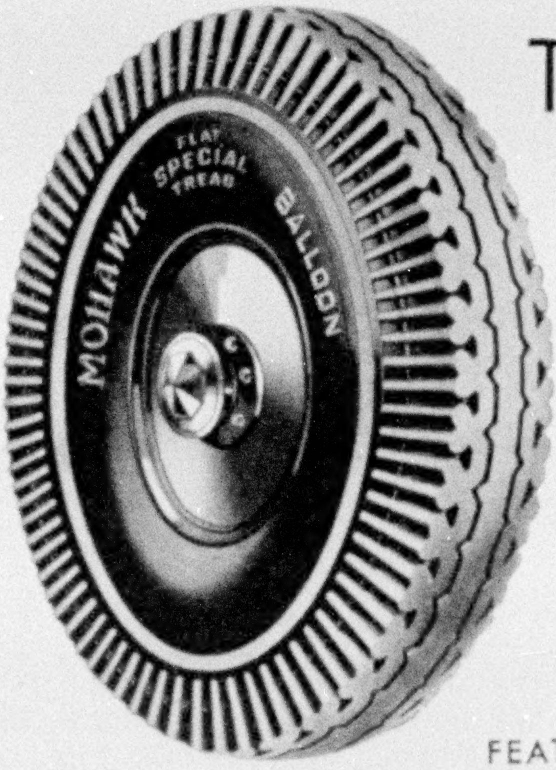

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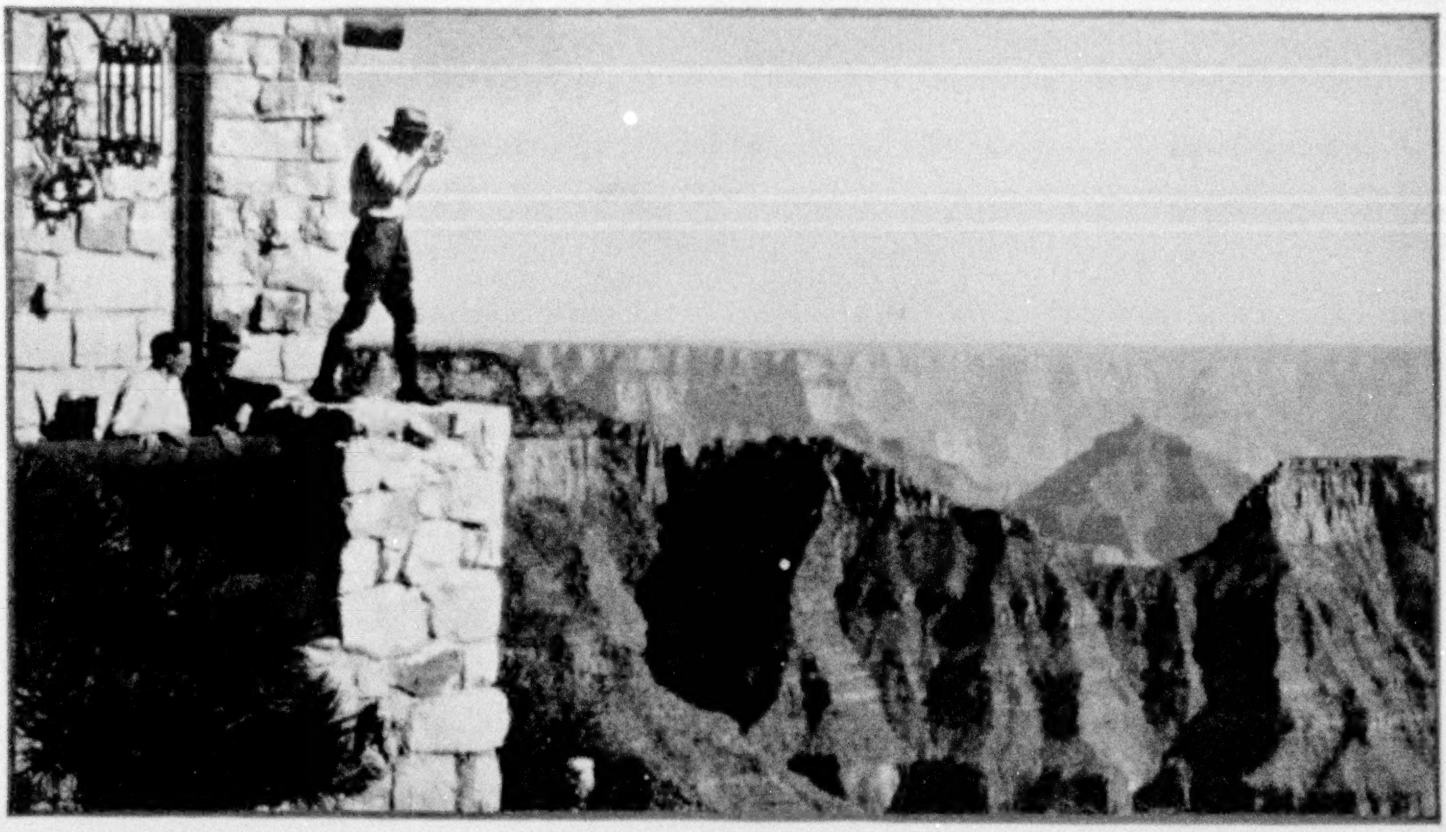

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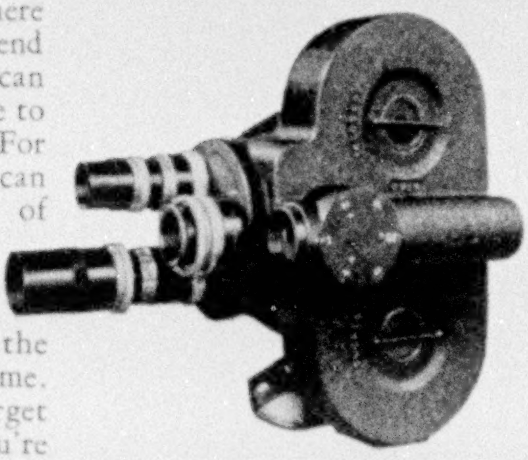

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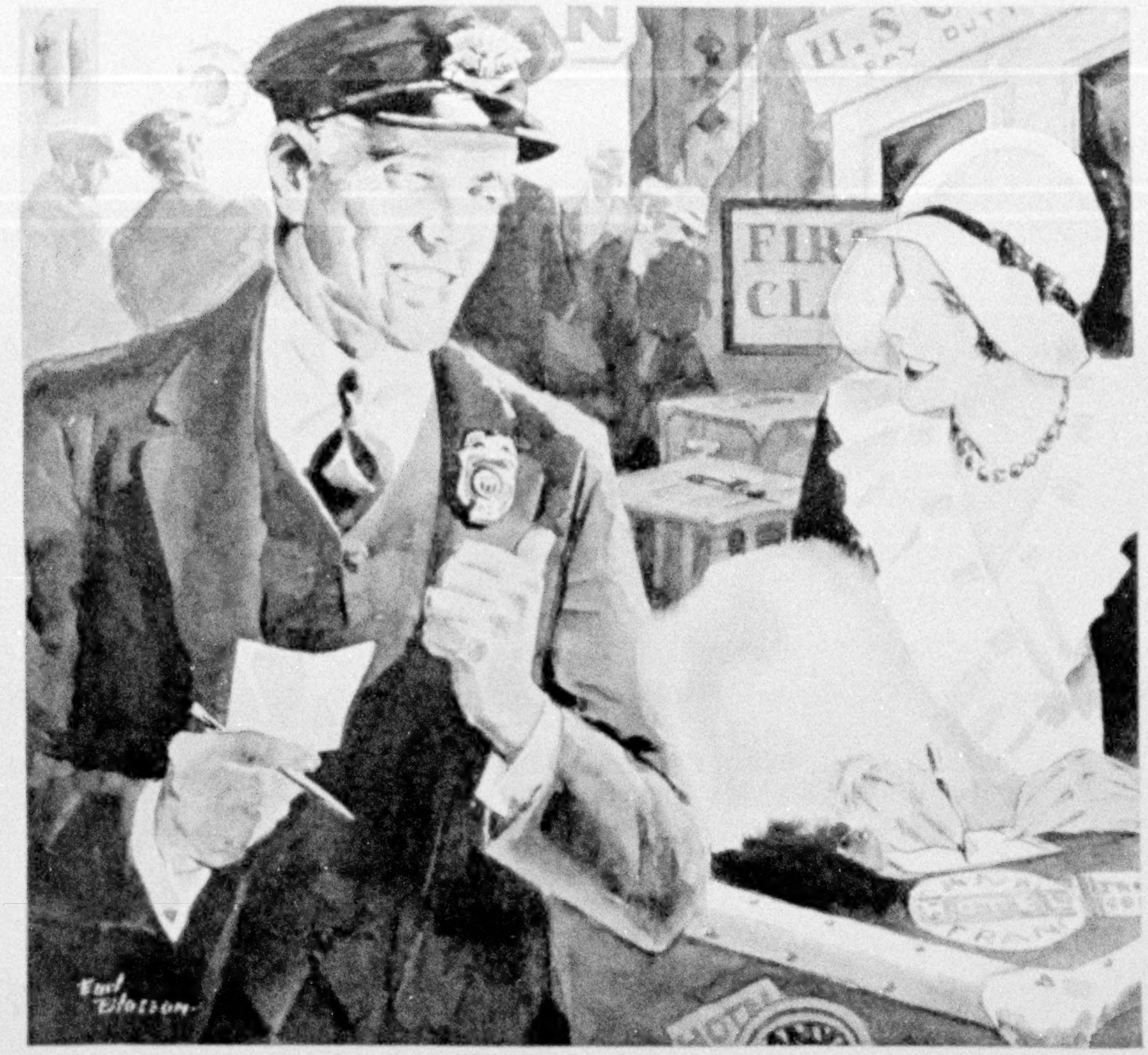

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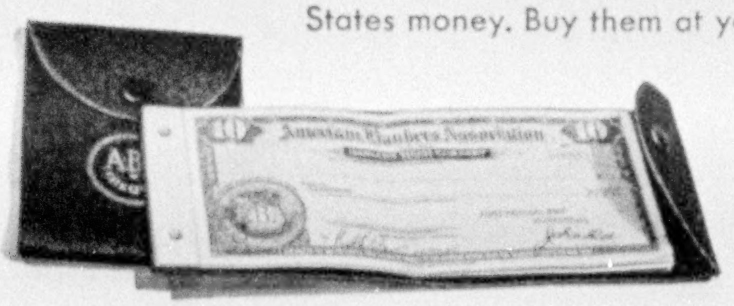

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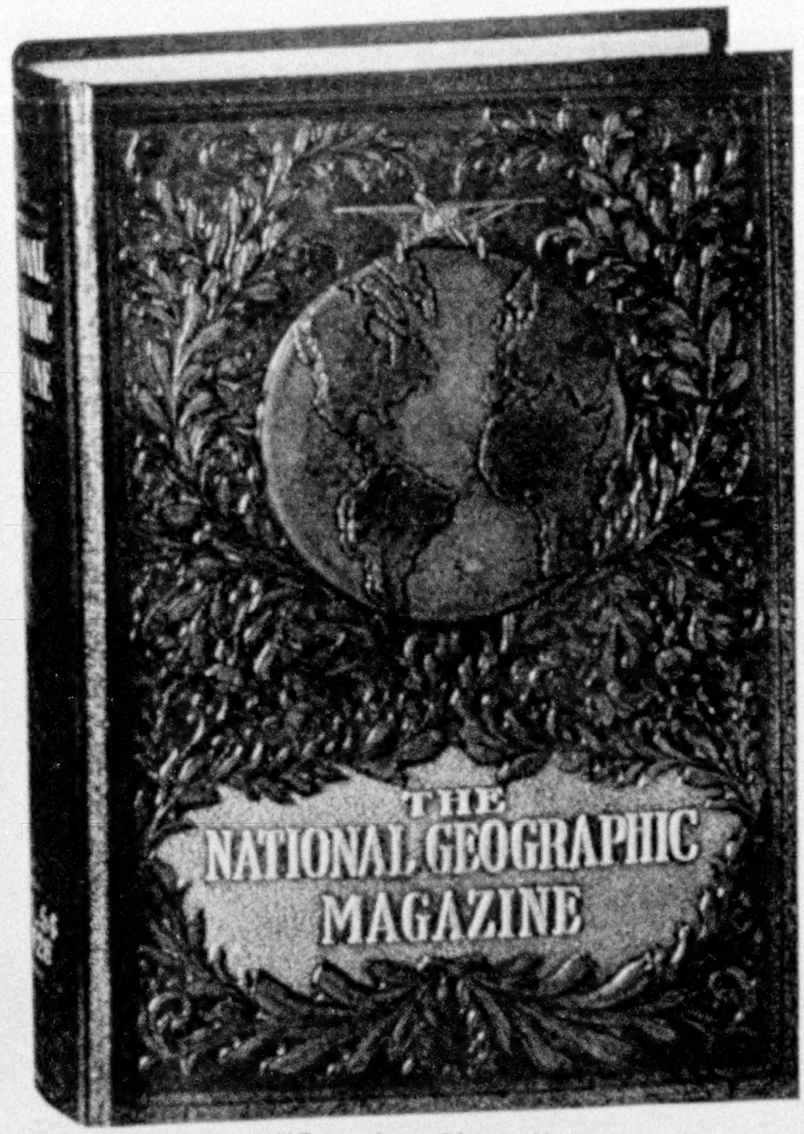

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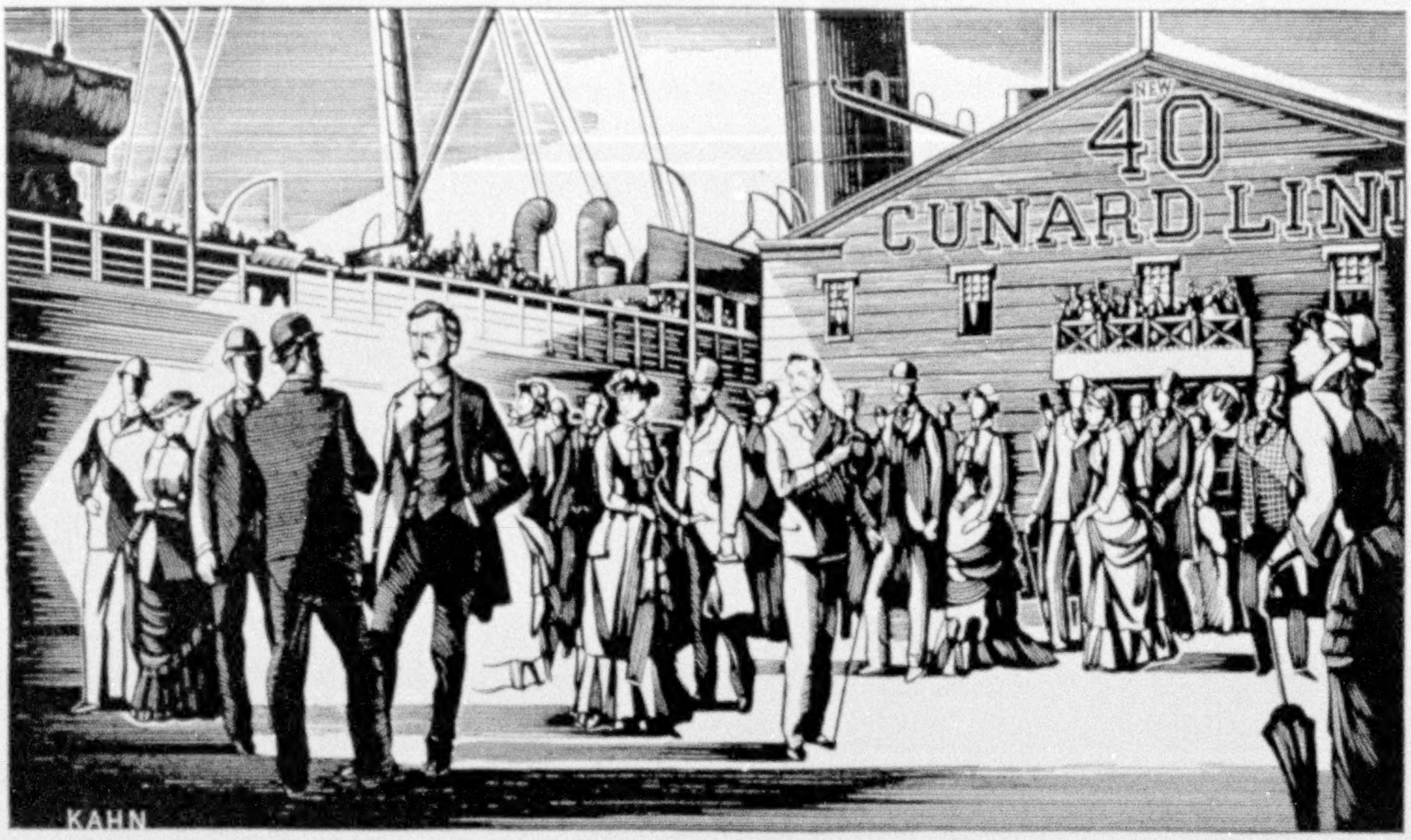

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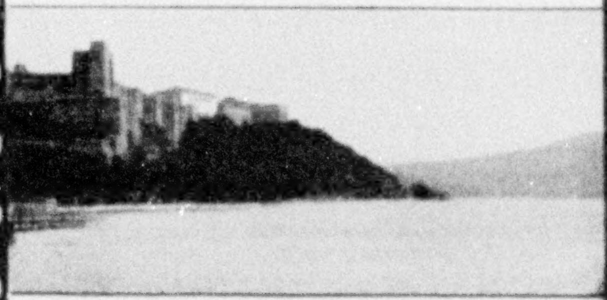

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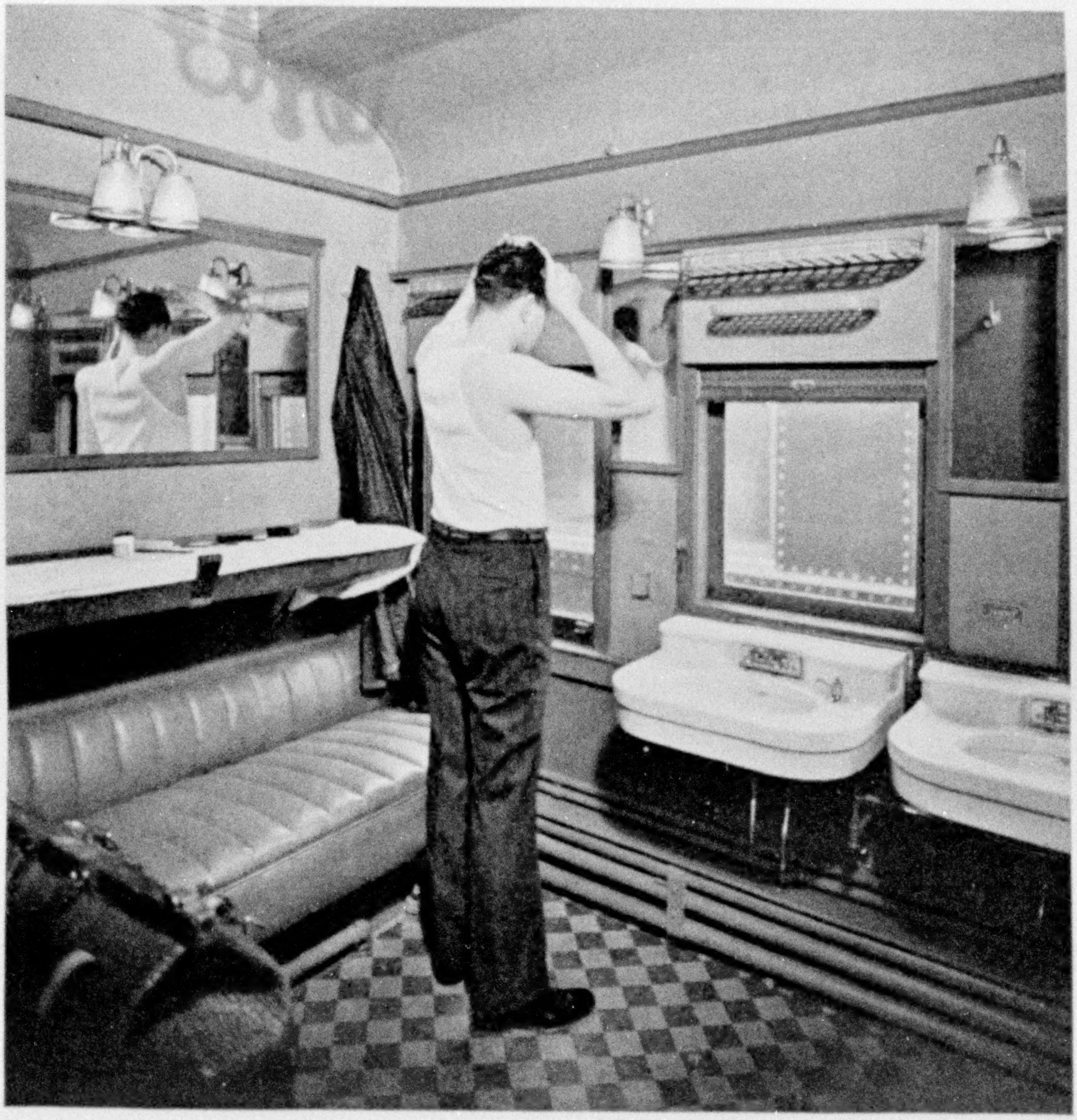

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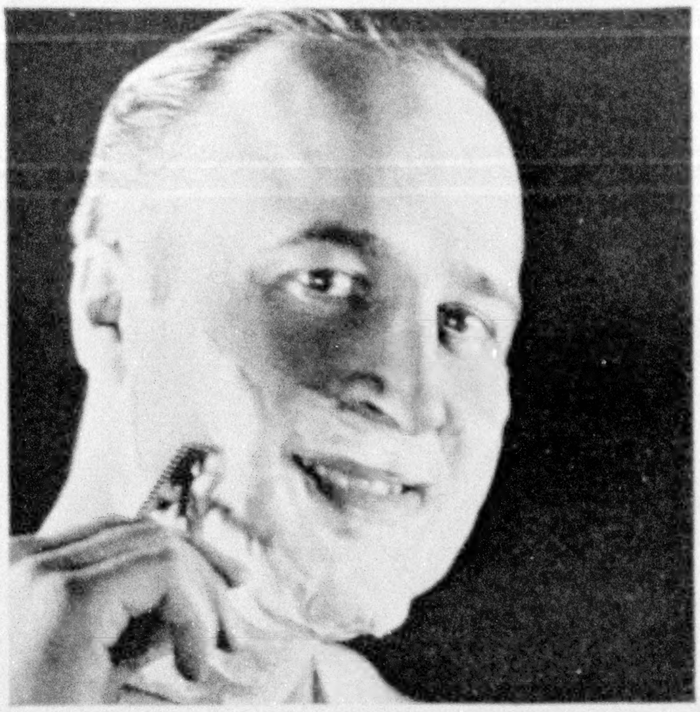

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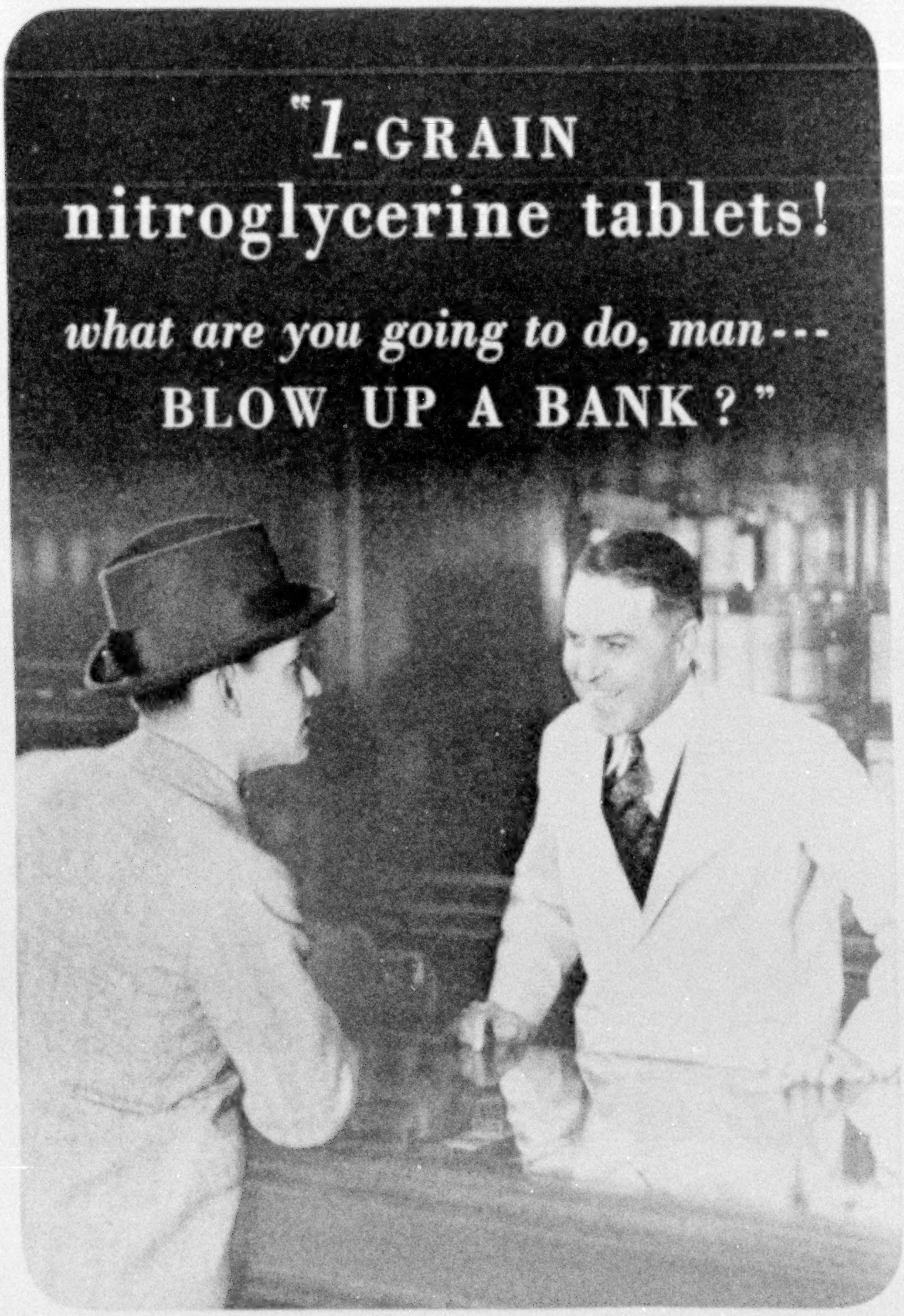

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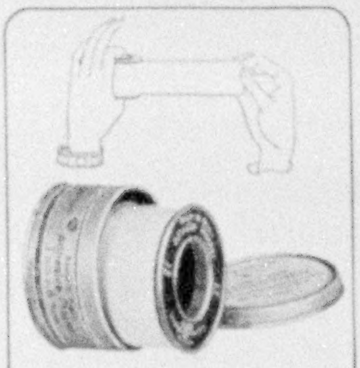

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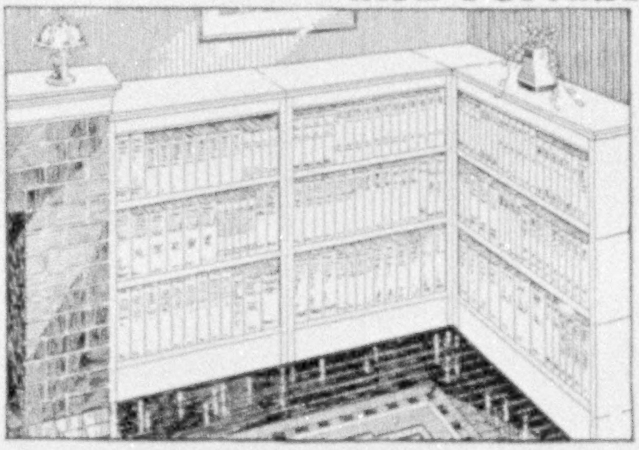

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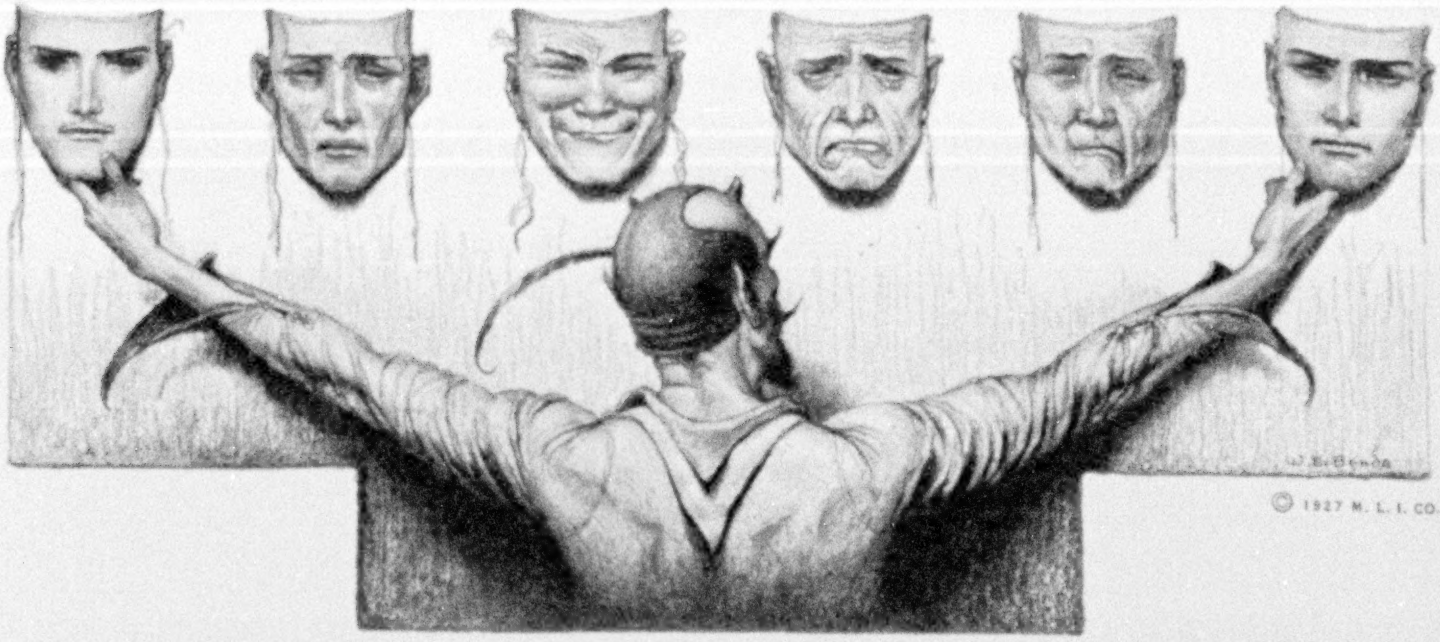

The Great Imitator

Mankind's most dangerous enemy is syphilis. It takes the form of many diseases, masking as rheumatism, arthritis, physical exhaustion or nervous breakdown. It may seem to be a form of skin, eye, heart, lung, throat or kidney trouble.

Most tragic of all, it often attacks the brain and spinal cord. It may result in blindness, deafness, locomotor ataxia, paralysis and insanity—a life-long tragedy. No wonder it is called "The Great Imitator".

In certain general hospitals, as high as 30% of all patients were found to be suffering directly or indirectly from this disease. Yet many of its victims had not known what was robbing them of health and strength until a medical examination, including blood and spinal fluid tests, revealed their actual condition.

Syphilis can usually be cured by competent physicians if detected in time and if the patient *faithfully and persistently follows the complete treatment prescribed by his doctor.*

If the early stages are neglected, cures are less certain, but a great deal can still be done to relieve suffering.

It is estimated that about thirteen million persons—one out of ten—in the United States and Canada have or at some time have had syphilis. Because of fear and ignorance, millions of victims have been imposed upon by quacks, charlatans and blackmailers pretending to practice medicine.

A most effective way to reduce the amount of syphilis is the pre-natal treatment of mothers suffering from this destructive disease.

Parents and teachers owe it to those dependent on them for education and guidance to replace secrecy by knowledge, frank instruction and friendly advice. Physicians, health departments and social hygiene societies willingly offer their aid.

The Metropolitan Life Insurance Company will gladly mail, free, its booklet, "The Great Imitator". You are urged to send for it. Ask for Booklet 730-N.

***NOTE:** The Metropolitan first published "The Great Imitator" in January, 1928. Since then, leaders of public health organizations and directors of big business have requested that it be republished and that booklets be provided for wide distribution. The booklets are ready.*

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Vol. LVIII, No. 1 WASHINGTON July, 1930

THE NATIONAL GEOGRAPHIC MAGAZINE

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NORWAY, A LAND OF STERN REALITY

Where Descendants of the Sea Kings of Old Triumphed Over Nature and Wrought a Nation of Arts and Crafts

By Alfred Pearce Dennis, Ph. D., LL. D.

Author of "The Land of Egypt," in the National Geographic Magazine

The passing of the great Norwegian, Fridtjof Nansen, at Oslo on May 13, 1930, was recorded with deep sorrow and reverence by the scientists of every civilized nation. Dr. Nansen was the leader of many expeditions into the North Polar region, notable among them the drift of the "Fram" in 1893, when he and one companion, leaving the icebound ship, pushed on afoot to achieve 86 degrees 14 minutes north latitude, the farthest north reached by man up to that time.

A gifted student of science, an acknowledged authority on Arctic problems, and a writer of rare ability, his work will always live. He was awarded the highest honors by scientific bodies throughout the world, among them the Special Gold Medal of the National Geographic Society, for distinguished achievement and signal contributions to geographic knowledge. He addressed the members of The Society in Washington on several occasions.—Editor.

WHY do people make their habitations in odd and uncomfortable quarters of this planet, where life is hard and dreary? Is it from choice, necessity, or accident? The Latter Day Saints, led by Brigham Young, traversed mountains and plains and settled down in the inhospitable, barren desert of Utah. They wanted to be left alone to work out their destinies in peace, and they made their desert to blossom like a rose. The Children of Israel, seeking a promised land, founded the city of their hopes on a sterile plateau of stones and rubble, while not so many leagues westward from Jerusalem lay an expanse of dark soil comparable in richness to the best black soils of Iowa and the Russian Ukraine.

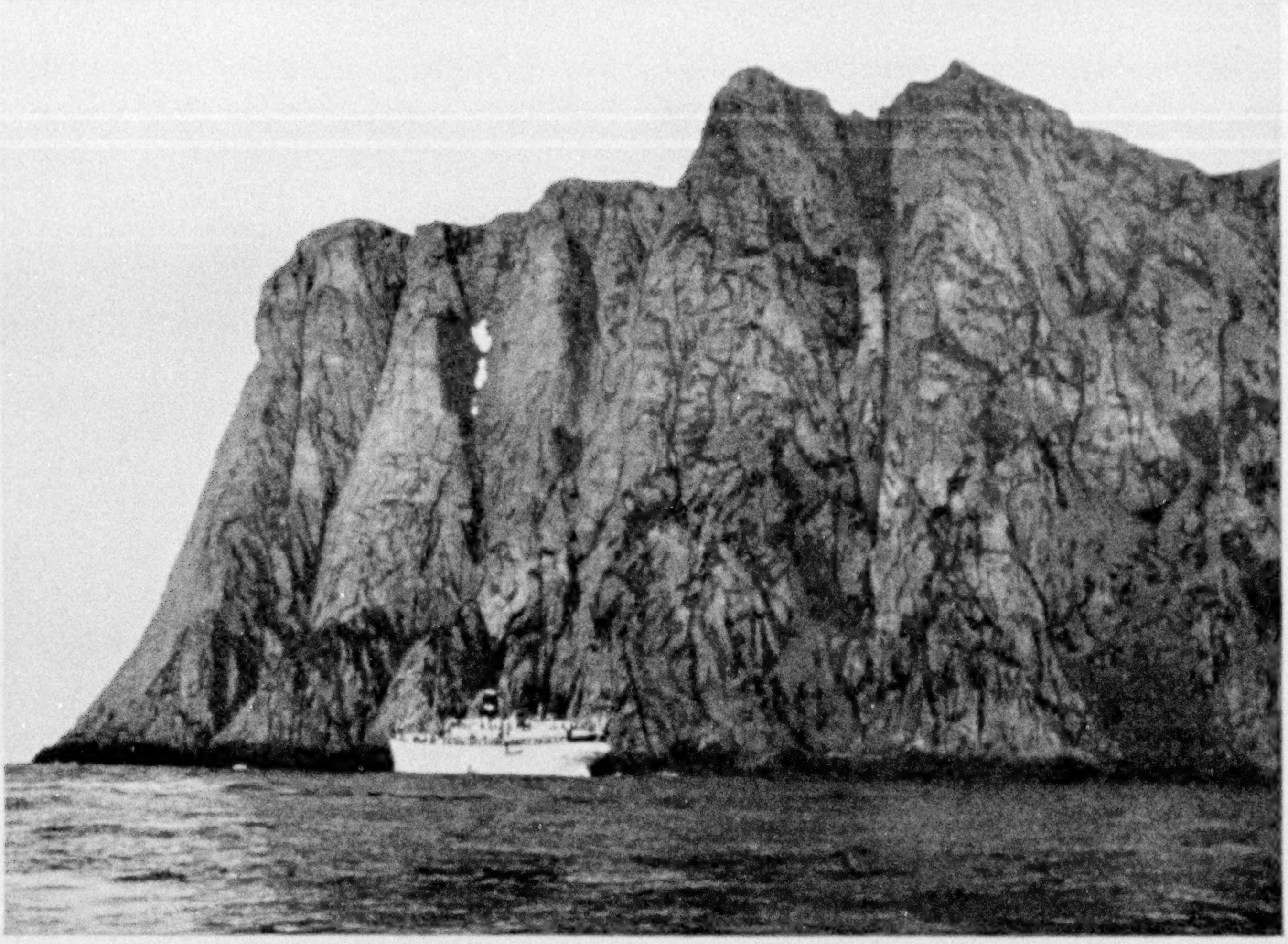
Similarly, Nature has dealt in niggard fashion with Norway; but the people who have chosen to live there have wrought so wisely and fiercely that all the world admires the Norwegians. Only a little more than 3 per cent of the land is under cultivation. The country lacks the chief prerequisite of modern industrialism—the juxtaposition of iron and coal. The Norwegians, striving to the utmost, cannot eke out a living from their soil. They must import food. Nor can they depend, as does England, upon the exchange of the products of their factories for the products of other people's farms.

Even the skies frown on Norway. The west coast for a good part of the year is shrouded by a pall of mist, fog, and drizzle,

Photograph by G. Heurlin

NATURE, IN STERN MOOD, CARVED THE FLAAMS VALLEY

Instead of taking the railway to Myrdal, many tourists drive in the two-wheeled *stolkjærre* (see Color Plate VII) the better to enjoy the chaotic scenery of the region (see, also, illustration, page 30).



© A. B. Wilse

NORTH CAPE, THE BOLD, 1,000-FOOT HEADLAND OF MAGERÖYA ISLAND

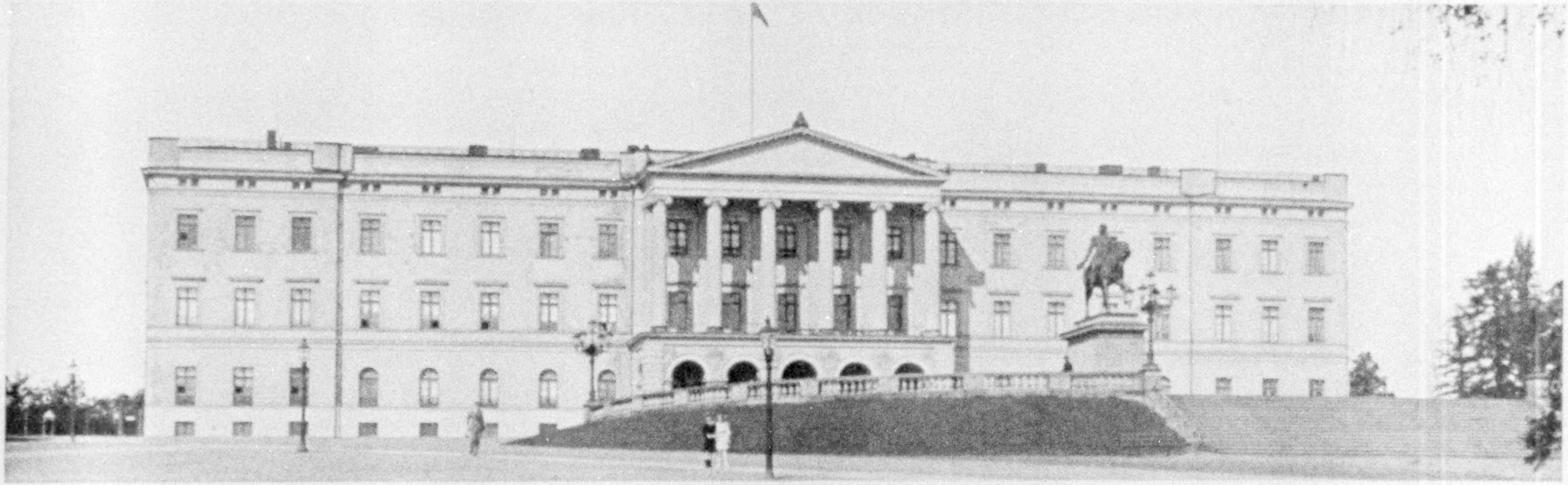
with 200 days of rain out of the year. The annual rainfall at Bergen is more than six feet.

The country is traversed by a great dorsal plateau standing stark and high above sea level. In these rocky, sterile soils, useful plant life will not strike root. A great rampart of mountains known as the Keel defines the Swedish frontier. Southernmost Norway is in the same latitude as northern Labrador, with northernmost Norway lying far within the Arctic Circle. Norway is hardly more than a fringe, or shelf, washed by the Arctic and the North Atlantic oceans and deeply indented by salt-water inland canals, known as fjords. For the most part, agriculture is limited to nooks and corners. Little farms cling to the base of mountains like shipwrecked sailors to a life raft. Sixty-six per cent of Norway's farms are less than five acres; 98 per cent are less than 25 acres.

By a figure of speech we personify Nature. We speak of Nature doing this or that and of Nature's intentions about this planet and the swarming life upon its surface. When we speak of Nature's prodigality, Nature's parsimony, Nature's wastefulness, it is our way of stating that Nature does not run things after the principles of efficiency experts. Norway seems to be one of Nature's climatic mistakes. Too much daylight in summer, too little in winter; too much worthless water here, too much sterile mountain there.

But what the country may lack in quality is more than offset by the quality of the people who inhabit it. Norwegians are more happily circumstanced than the common run of mortals. They are essentially open-air country people, knowing nothing of the misery and abject poverty of city slums and tenements. They have learned to live comfortably with themselves, having a wealth of inner resources on which to draw. They go down to the sea in ships and see the earth and the fullness thereof. Before them lies the panorama of mountains, glaciers, cloud racks floating through the lofty defiles of their fjords.

They know the world, too, from the insides of books. They are a bookish people, prizing education. Illiterates are



Photograph by Donald McLeish

HERE LIVES NORWAY'S "CONSTITUTIONAL PRESIDENT FOR LIFE"

On a hill at the west end of Oslo stands the Royal Palace, residence of King Haakon VII, the democratic king of a democratic country.

Photograph by De Cou from Galloway

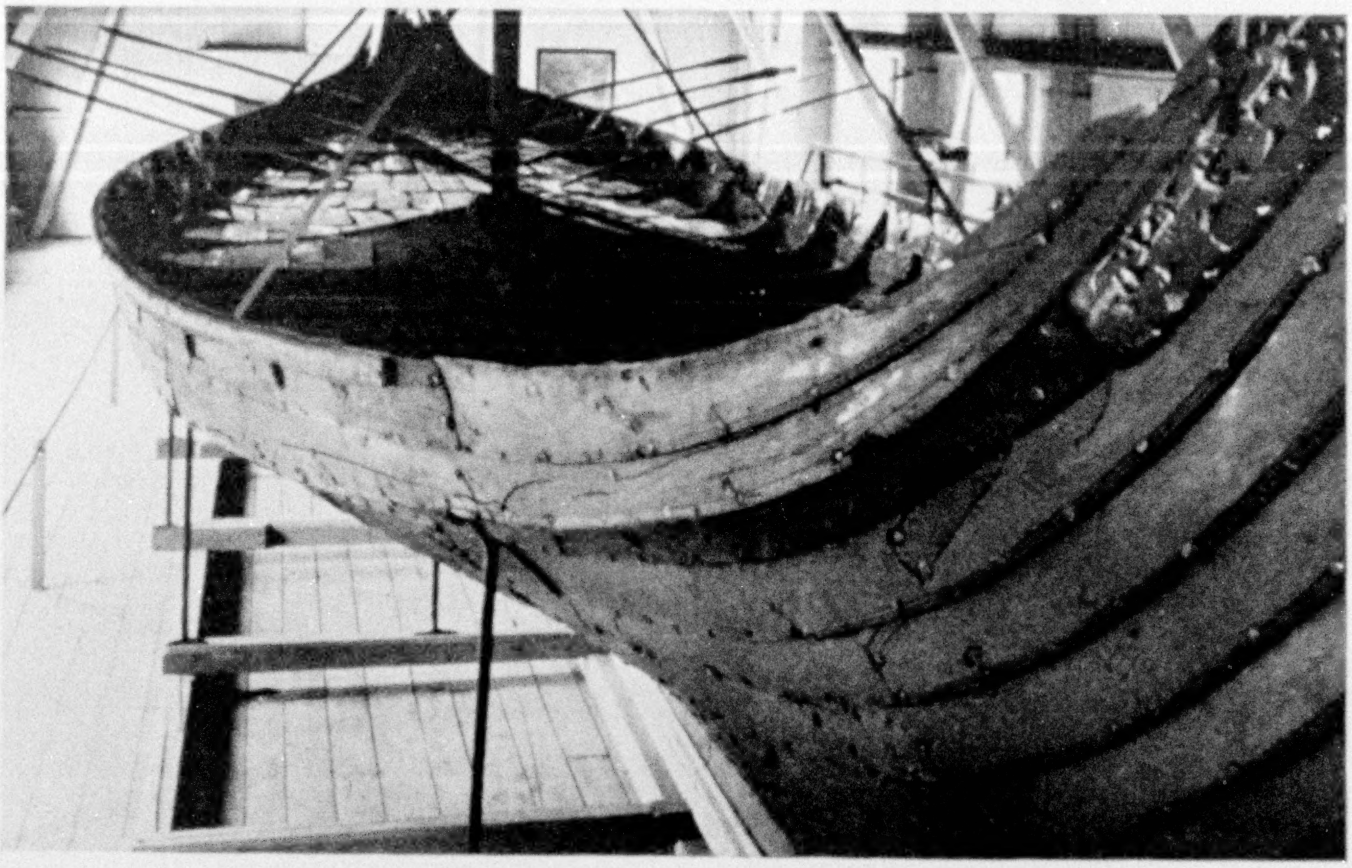
THE CAPITAL OF NORWAY IS FIRST IN COMMERCE AND FIRST IN POPULATION

Half the kingdom's imports pass through Oslo, which has a large merchant fleet of steamers, motor vessels, and small, coastwise, sailing vessels. Since 1925 the city has borne the name of the original town, founded 900 years ago as a rival to Nidaros (Trondhjem).

Photograph by A. B. Wilse

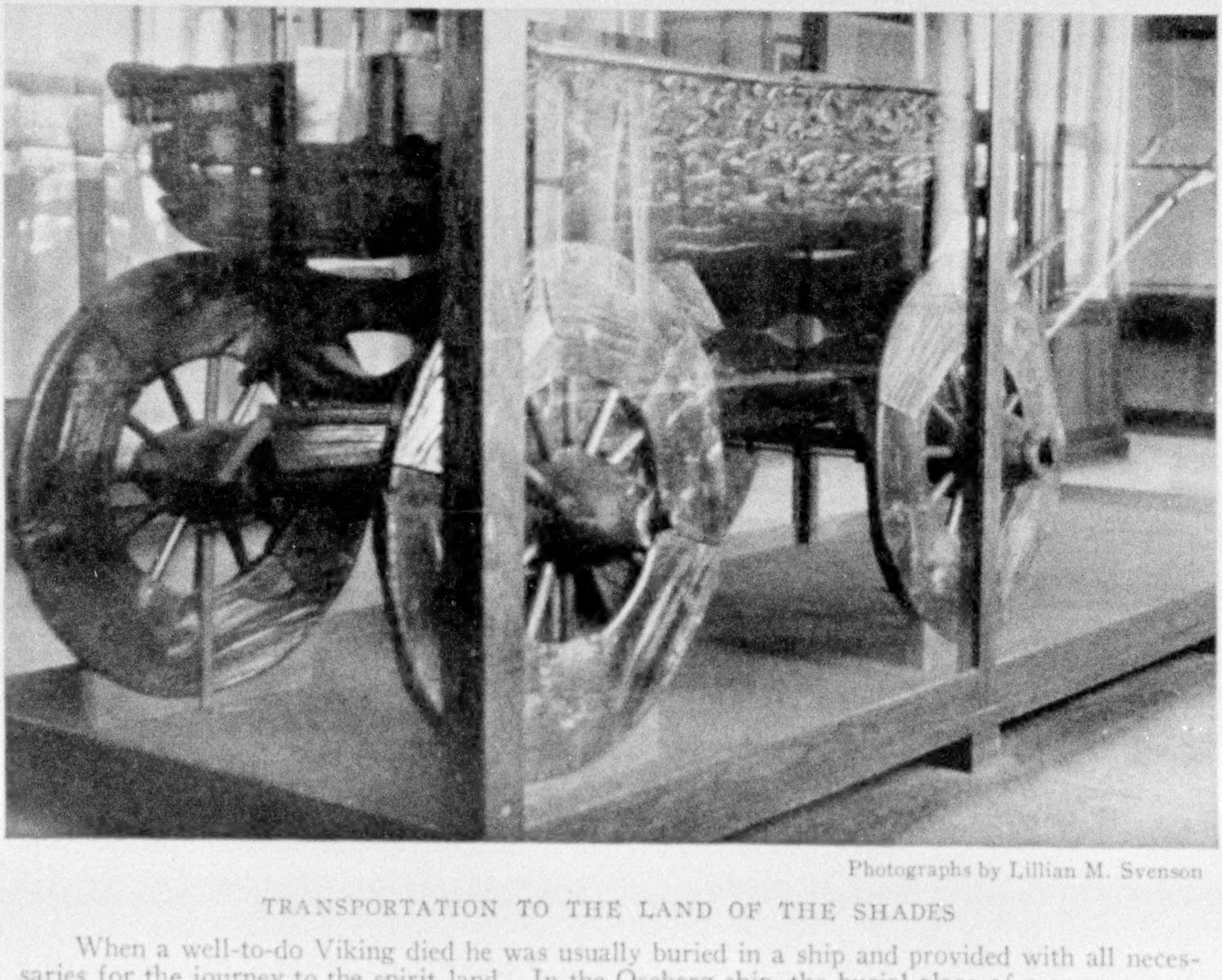
FORTUN VALLEY LEADS UP FROM SOGNE FJORD

With her rugged uplands and bare mountains, numerous lakes, rivers and fjords, Norway offers but little opportunity for agriculture. Most of the arable soil lies in narrow strips along the rivers and fjords. The pleasant beauty of Fortun Valley attests the industry and strength of the people.



WHEN IT CAME TO SHIPS, THE VIKINGS WERE AHEAD OF THE CHRISTIAN NATIONS

The 1100-year-old Oseberg ship, found in 1903 and preserved in the Open-Air Museum at Bygdö, near Oslo, is of oak, and the timbers kept so well that they could be steamed and bent back to their original shape. Its general structure indicates its use as a pleasure boat in quiet waters.



Photographs by Lillian M. Svenson

TRANSPORTATION TO THE LAND OF THE SHADES

When a well-to-do Viking died he was usually buried in a ship and provided with all necessaries for the journey to the spirit land. In the Oseberg ship, the burial place of a woman, was found this beautifully carved wooden wagon, now preserved in the University's Historical Museum at Oslo.

Photograph by De Cou from Galloway

SOUVENIR DOLLS FROM THE NORWEGIAN NORTH: HAMMERFEST

about as plentiful in Norway as horned toads on Boston Common. When it comes to exchange of intelligence, Norway has more telephones than Spain or Poland, with populations from seven to ten times as great. The country has its Ibsens and Griegs, whom the whole world reveres, and a multitude of little Ibsens and little Griegs we don't hear about.

Each country, like each human being on this planet, has a physiognomy and character of its own. Chile, another elongated mountainous coast country fronting the western sea, in a considerable area of its homeland is parched and rainless, while Norway is drenched with moisture. Greece and Italy suffer from too much sun, while Norway hasn't enough to go round. Greece, Albania, Portugal, Estonia, and Norway are the only European countries which grow no sugar beets—too much sun in the Mediterranean countries, too little in Norway. Contrast the loiterers basking in the winter's sunshine on the steps of the Piazza di Spagna, Rome, with the Norwegians clad in furs and oilskins adventuring over cold, gray, fog-covered waters. Italy and Norway from early antiquity bred a race of sea-rovers, adventurers, discoverers.

Norway and Greece, looking seaward, present the appearance of once compact lands that have been shot to pieces by titanic subterranean explosions. Their deeply indented coasts are fringed and tasseled with island groups. The sea is sown thick with fragments like celestial star dust in the Milky Way. The islands of Greece furnish goats, currants, and material for poetic rhapsodizing. Norway's coastline furnishes ideal facilities for drying fish and picturesque scenery for the

Photograph by De Cou from Galloway

THE LAATEFOSS PLUNGES FROM BLACK CLIFFS NEAR ODDA

This boisterous waterfall, fed by a lake high above, sends dense clouds of fine spray across the road.

delectation of delighted tourists. Counting indentations and sinuosities, Norway's coastline measures about 12,000 miles.

The Norwegian coast is an exaggerated southern Alaskan coast. Skippers navigate big ships through Norwegian fjords just as they do through the deep-cut Alaskan inner canals. The fjords, whether the result of glacial erosion or faulting of the earth's crust, are of awesome beauty and of considerable human utility. Without understanding how we come by them one may admire their scenic grandeur.

THE FJORDS UNITE THE NORWEGIANS

Homer habitually speaks of the sea of his day as the estranging main, but the Norwegian fjords unite rather than estrange men. They break up the loneliness and exclusiveness of dispersed human units. In a patchy, rock-sown land, isolated farmers are knit together by smooth, landlocked water highways.

Our ways are the land ways of a great continent. The ways of the Norwegians, like their forbears the Vikings, are the waterways of the great globe itself. Over their destinies hovers always a vague interrogation. What of mystery and chance lies behind the mists and fogs which veil the known from the unknown? Will the shoals of fish find their way back through the murky depths of the ocean to the coastal banks? The skies lower; can the boats sail? Will the whaling ships return safe from their 20,000-mile voyage to Antarctic seas?

Are water businesses more hazardous than land businesses? Does it call for braver, stouter, more adventurous souls to

THE NATIONAL THEATER AT OSLO

It faces the Eidsvolds-Plads gardens, meeting place and promenade for the people of the Norwegian capital. The statue is that of the great Norwegian dramatist, Björnstjerne Björnson. Near by stands a colossal statue of that other great Norwegian dramatist, Henrik Ibsen.

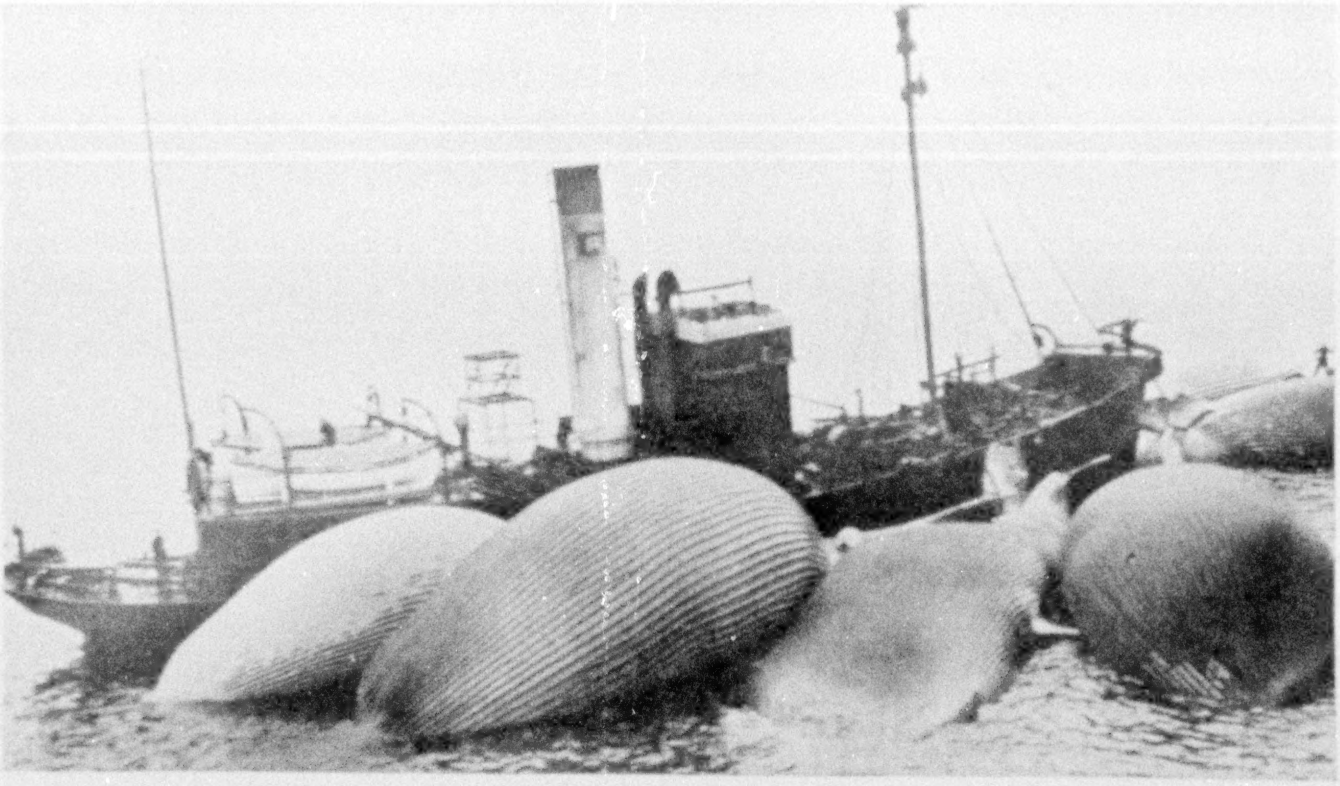
get their living from the sea than from the land? What are the ups and downs of fishing compared to the ups and downs of farming?

The farmer is always up against the unknown variable x—the weather. Good crops one year, poor the next. Yet in the long run the ups and downs cancel one another. Summer and winter, seed time and harvest do not fail.

The success of the fisherman, like that of the farmer, is dependent upon weather. But the fisherman, unlike the farmer, has an unstable medium beneath him as well as above him. The presence of unseen fish in the depths of the water is usually a matter of pure speculation, but fortunately for Norway incertitude has been pretty well taken out of its fishing business.

The warm Atlantic drift from the Gulf Stream supplies Norway with both climate and fish. But for this beneficence of Nature, Norway would be a bleak and inhospitable waste and most of the Norwegians would be compelled to emigrate or starve. But Old Man River keeps flowing along and will continue till our summers have deceased. Unstable as water, the life-giving stream holds ceaselessly to its course, varying little more, comparatively speaking, from its predestined path than a train proceeding on fixed rails to its appointed destination.

Or suppose, in turn, that the fish, taking offense at the depletion of their numbers, should turn aside and omit the North Sea from their travel itinerary? The ways of fish, like those of Providence itself, are



Photograph by Pacific and Atlantic

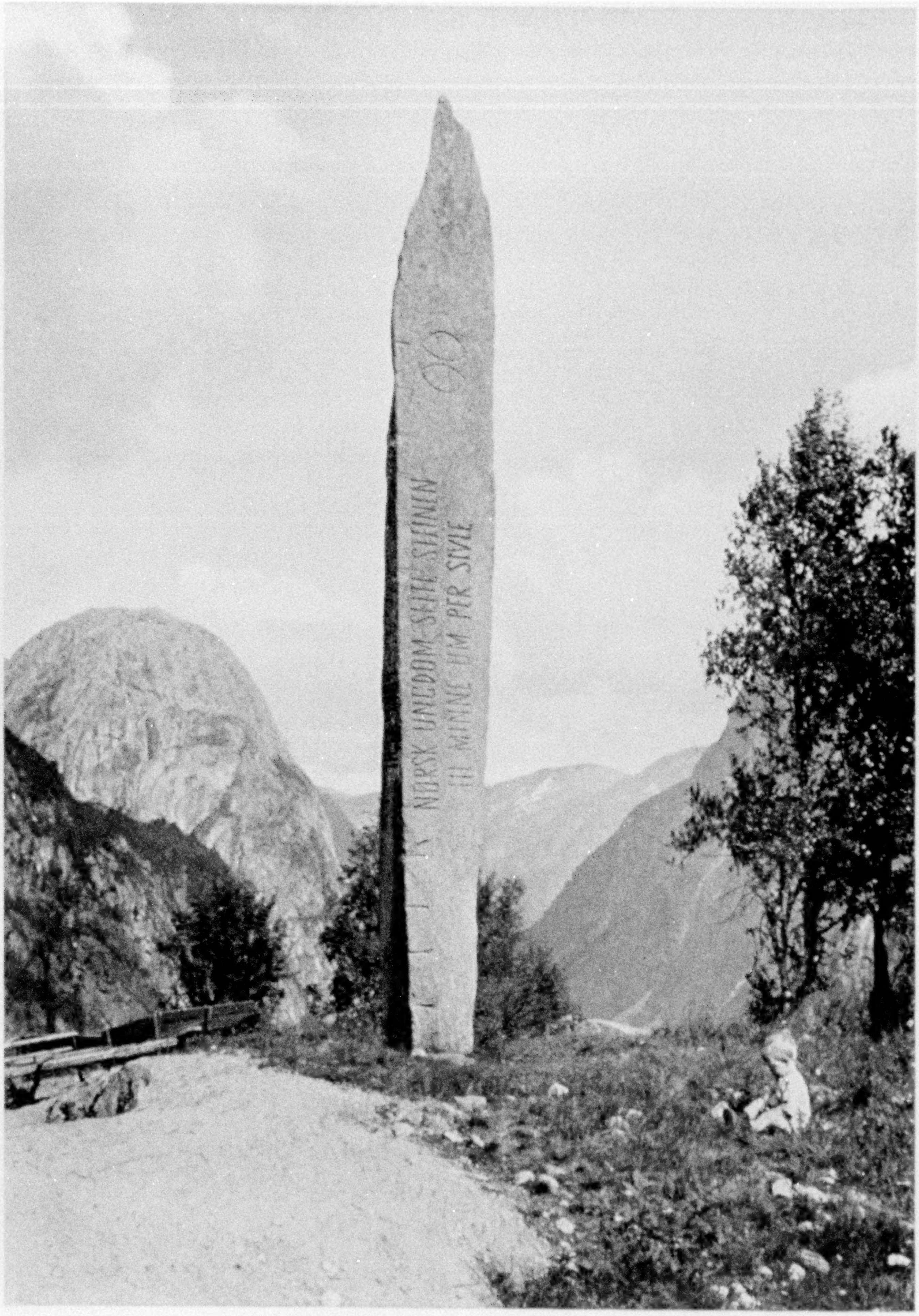
MOBY DICK COMES TO A USEFUL END

Instead of taking whales to a shore station for treatment, many of the newer whaling ships are equipped to flense the animals and extract the oil themselves. The tenders, or catchers, do the actual harpooning, inflate the carcasses, then tow them to the floating factory, where the animal is stripped, cut up, and fed to the huge vats.

Photograph by Wide World

THE HORSESHOE ARENA AT HOLMENKOLLEN, WITH THE "NORWEGIAN DERBY" IN FULL SWING

This famous ski tournament, held every February at Oslo's winter resort, is devoted to jumping contests and long-distance racing. Skiing is now Norway's national sport.



Photograph by Donald McLeish

A SHAFT ERECTED TO THE MEMORY OF A PEASANT POET

This monument, bearing the inscription that "the young people of Norway set this stone in memory of Per Sivle," a peasant who lived in a small house in the vicinity and produced delightful verses in the vernacular about the beauties of the surrounding country, stands at the head of the deep, somber valley of the Nærö, more than 800 feet above the bed of the river.

sometimes past finding out. But we know this, that the North Sea is one vast fish farm which produces a crop every day in the year and which, like the soil of the Nile, suffers little exhaustion after harvests of five thousand years.

Fish, following family tradition, crowd into the shoal waters of the North Sea to feed and breed. They've been doing it for thousands of years, and they'll probably keep on just so long as this poor earth's pale history runs. They return like the swallows in the spring. They move with the exactitude of the procession of the equinoxes or the annual rise of the River Nile.

NORWAY HAS THREE STRINGS TO ITS FISHING BOW

Roughly speaking, Norway has three strings to its fishing bow: cod, whale, and herring; but the herring is king. Herring, because of their abundance, give rise to the greatest of the world's fisheries. They are as gregarious as the starlings which cluster by night in the tops of trees on Pennsylvania Avenue, Washington. They run in immense schools, with some of their life cycle still shrouded in obscurity, although it is probably as well known as that of any other important fish. When, where, and why do these shoals migrate?*

Herring bones are found in the kitchen middens or garbage piles of prehistoric Norsemen. Norwegian herring fisheries were famous before William the Conqueror. The Norwegian fish catch runs to about one and three-quarter billion pounds, of which approximately one billion pounds are contributed by the herring tribe.

The live herring is something of a traveler, but the dead herring goes farther. What one may call the "pickled-herring-raw-cucumber-sour-cream belt" includes a better part of eastern Germany, Poland, the three Baltic States, Finland, and Russia. Here you have a dense population who loyally regard the herring as the dean of comestibles. With a snack of herring and a snifter of vodka the Estonian, Polish, or Russian peasant can get out and do a fair day's work.

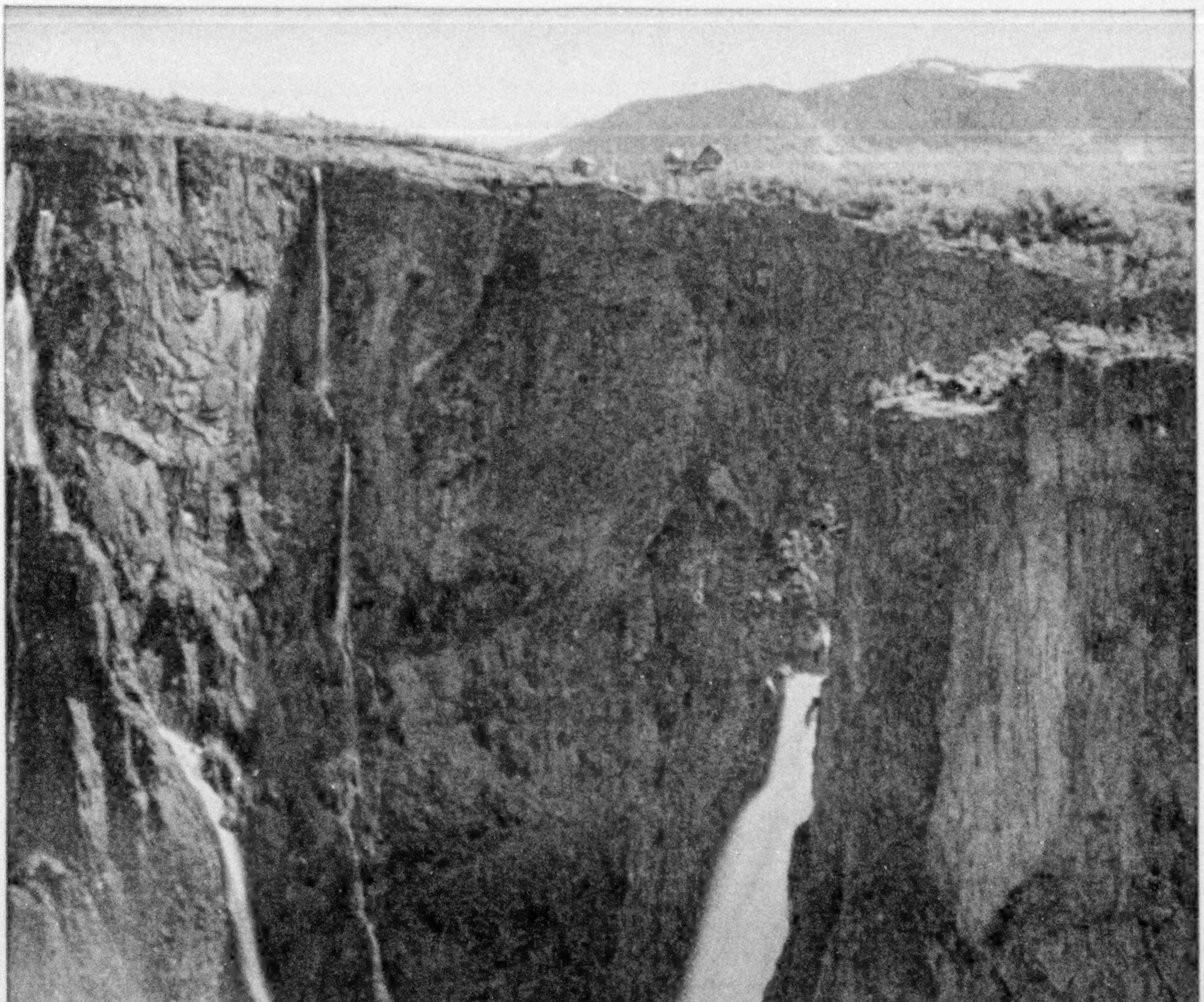
The Norwegian cod, unlike the herring, travels southward rather than eastward. Cured codfish enjoys the entrée to all classes of society in southern Europe, particularly in the Catholic countries where meatless days are prescribed. Some years ago, when Norway was trying out prohibition with no great success, a serious effort was made to exclude the importation of the more heady Spanish and Portuguese wines. The Iberians naturally resented the affront to their delicious wines and threatened reprisals upon the Norwegian codfish. The anti-codfish campaign was too much for the Norwegians. They capitulated by throwing open their doors to Mediterranean wines.

"How to catch and eat and how to avoid being caught and eaten"—that sums up the life philosophy of fishes. The urge to eat and the urge to propagate goads fish inexorably to their feeding and breeding grounds. It is the play of the self-preservative and the species-preservative instincts. The salmon on maturity deserts the congenial salty waters of its natural habitat, the ocean, struggles up fresh-water streams, surmounting waterfalls, leaping obstacles, always going against the current, wearing out its life to attain its breeding grounds.

Primitive man was something of a nomad, moving to places where the best and most easily captured game was to be had. Herring and cod practice about the same economy. They feed in northern waters, where feeding is best and easiest, off the banks of Newfoundland, Scotland, Norway, way up in northern waters about the Lofoten Islands far within the Arctic Circle. These Arctic waters teem with minute organic life. Painstakingly for generations Scandinavian scientists have studied the mysteries of marine life and given their valuable findings to the world.

The cod when caught ranges from 3 to 12 years old. Where has it been all these years? Where does the young Norwegian herring go when it leaves the west coast of Norway? Vain questions! It is enough to know that the herring and the cod, with all their restlessness and migratory instincts, are plentiful enough to keep

* See, also, "King Herring: An Account of the World's Most Valuable Fish, the Industries It Supports, and the Part It has Played in History," by Hugh M. Smith, in the NATIONAL GEOGRAPHIC MAGAZINE for August, 1909.



© National Geographic Society Natural-Color Photograph by Gustav Heurlin

NORWAY'S DARK CLIFFS ARE HUNG WITH SUPERB CATARACTS

Many waterfalls created by the great wastes of melting snowfields abound in the mountain districts. In potential waterpower Norway leads all Europe. These high falls are in the Öye region, southeast of Aalesund.

© National Geographic Society

HER APRON INDICATES HER HOME DISTRICT

The "Hardanger design," which takes its name from Hardanger Fjord, is known to Norwegians all over the kingdom, and is used on tablecloths, doilies, and window curtains.

Natural-Color Photographs by Gustav Heurlin

DAUGHTERS OF "SMILING HARDANGER"

The verdant farmsteads, sparkling glaciers and icefields, and foaming waterfalls of Norway's second largest fjord, have long been famous. Girls from Ulvik, at the head of the fjord.

© National Geographic Society

Natural-Color Photograph by Gustav Heurlin

RICH FARMLANDS LIKE THESE ARE A RARITY IN NORWAY

With almost double the area of the New England States, the kingdom has only three acres in every hundred under the plow, for most of the land is either unproductive or covered with rocks, forests, rivers, and lakes. Cattle mean more than crops, for pastureland is abundant. Farms at Gol, in the Halling Valley, on the Bergen-Oslo Railway.

© National Geographic Society Natural-Color Photograph by Gustav Heurlin

THE FJÆRLANDS IS AN ARM OF NORWAY'S LONGEST, DEEPEST, AND WIDEST FJORD

The Sogne Fjord is 112 miles long, 4 miles wide, on an average, and its greatest depth is around 4,000 feet. In the Viking Age it was a highway to the ocean, and many a high-prowed dragon ship cut its waters. Mundal village, in the middle distance, lies near the head of Fjærlands Fjord, which extends for 16 miles toward the Jostedalsbre, the largest snowfield in Europe, with an area of 330 square miles (see also Color Plates VIII and XIII).

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A SCHOOL-TEACHER AMONG A PEOPLE EAGER TO LEARN

So well-organized is the school system of Norway that illiteracy is practically nonexistent.

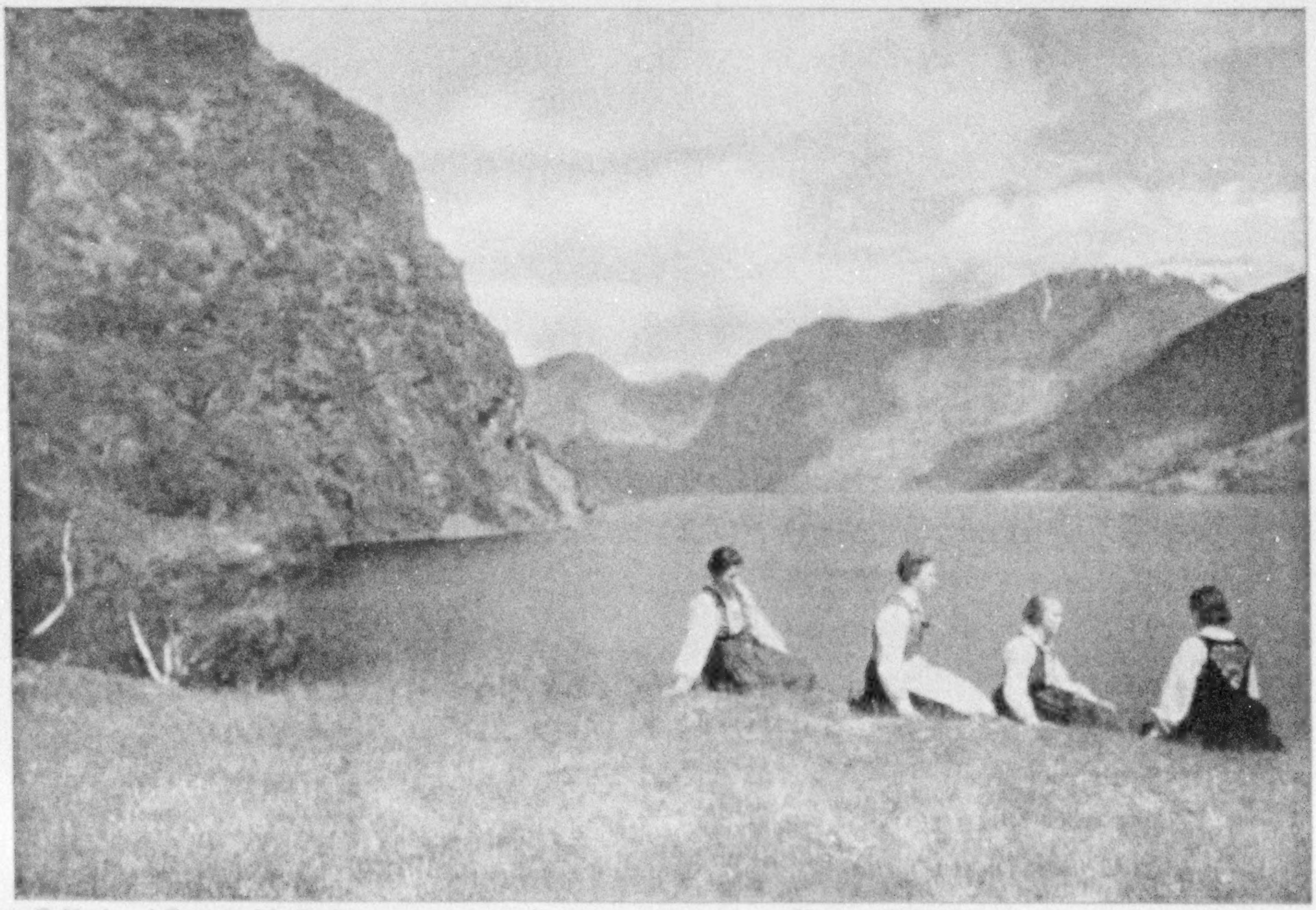
Natural-Color Photographs by Gustav Hearlin

A CROWN COMPLETES THE BRIDE'S COSTUME

A Norwegian wedding with almost every participant wearing the old dress, is now seen only in rural sections.

NORWEGIAN ROAD-BUILDING DEMANDS ENGINEERING SKILL

Terraces of mountain valleys along narrow river beds and steep slopes of mountain plateaus, especially those descending abrupt western slopes to fjords, present great difficulties. Stones cleared from fields serve as fences and as barriers to keep earth from sliding into the road.



© National Geographic Society Natural-Color Photographs by Gustav Heurlin

WESTERN NORWAY IS PIERCED WITH MANY FJORDS

Viking fleets from Norway and Denmark carried the word "fjord" far and wide. In Great Britain and Ireland they left their mark in such place names as Wexford, Waterford, and perhaps in Deptford, "the deep reach" on the Thames. This fjord runs into Vatnahalsen.

RURAL NORWAY IS A LAND OF WOODEN HOUSES

The poorer homes, usually of logs, are gradually giving way to more modern structures. This outbuilding in a field at Balholm has a birch-bark roof overlaid with a carpet of turf, on which waving grasses, flowers, and even bushes will spring up (see also Color Plates XI and XII).

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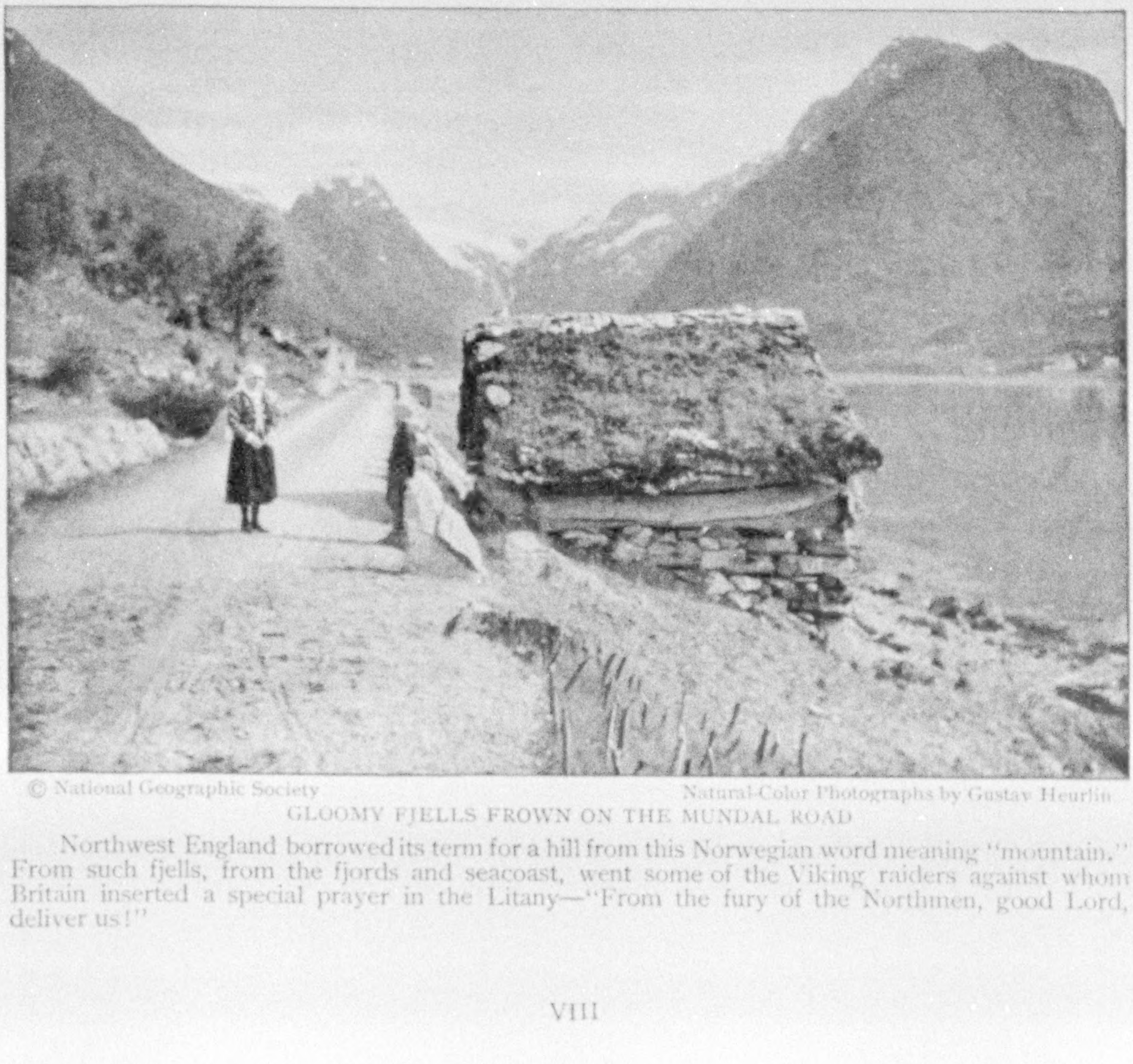
Natural-Color Photographs by Gustav Heurlin

THE STOLKJÆRRE IS WESTERN NORWAY'S COMMONEST VEHICLE

The light cart accommodates two passengers in front, and the driver on a small seat behind. The reins pass between the passengers. The Norwegian fjord horse is an active, hardy little beast, highly serviceable in mountain country.

AN OUTDOOR LESSON AT HÖNEFOSS

Sawmills and pulp mills support this town, 25 miles northwest of Oslo, in the largest of Norway's wooded areas.



© National Geographic Society Natural-Color Photographs by Gustav Heurlin

GLOOMY FJELLS FROWN ON THE MUNDAL ROAD

Northwest England borrowed its term for a hill from this Norwegian word meaning "mountain." From such fjells, from the fjords and seacoast, went some of the Viking raiders against whom Britain inserted a special prayer in the Litany—"From the fury of the Northmen, good Lord, deliver us!"

the fisher folk of Norway busy nearly every month in the year.

Norwegian fisheries have developed from small beginnings, when little wooden boats put out a mile or two from the shore, scrabbling for a meager catch of herring. Now great steel powerboats make catches of 10,000 barrels of fish in a day. Once estimated by the pound, the catch is now estimated by the ton.

NORWAY DOMINATES THE WHALING INDUSTRY

Norway has come largely to control the world's whaling industry, once a great American business, with Yankee ships sailing from New England ports. About the turn of the century it looked as if the whaling business the world over was doomed to early extinction. Defenseless monsters, the poor whales do not get an even break! Nature ironically dooms them by causing them to signal their own destruction. If whales were equipped to remain beneath the surface even as long as the modern submarine, they would be more than a match for the energetic Norwegians, with their big steel ships and long-range harpoon guns.

Improved devices for catching whales constitute one reason why the Norwegian whaling business is becoming more profitable to-day. "Canst thou draw out leviathan with an hook?" To this rhetorical question the Norwegians respond by actually drawing with hooks these huge animals out of the deep and into the hulls of the great mother ships which render the carcasses into oil, fertilizer, and whalebone. The chief theater of operations is in the Antarctic (see pages 10 and 23).

It would take the power of the poet Coleridge, that sensitive interpreter of bad smells, to render justice to those of a Norwegian floating fish factory. Perhaps these hardy Norse sailors become habituated to bad smells and cease to perceive them in the sense that the operator of a hurdy-gurdy ceases to hear the tunes of detestable sweetness ground out on his machine. If unpleasant, like good, smells had a commercial value, the theater of the world's perfumery industry would shift from France to Norway. It will suffice to remark, however, that Norway's production of whale oil rose from 19 million pounds in 1906 to 311 million pounds in 1927.

The Norwegian annual herring catch would load a solid train of steel gondola cars reaching from New York to Philadelphia, or, if converted to Norwegian cars, a solid train 300 miles long. It would require at least double these train lengths to handle the annual catch of whales.

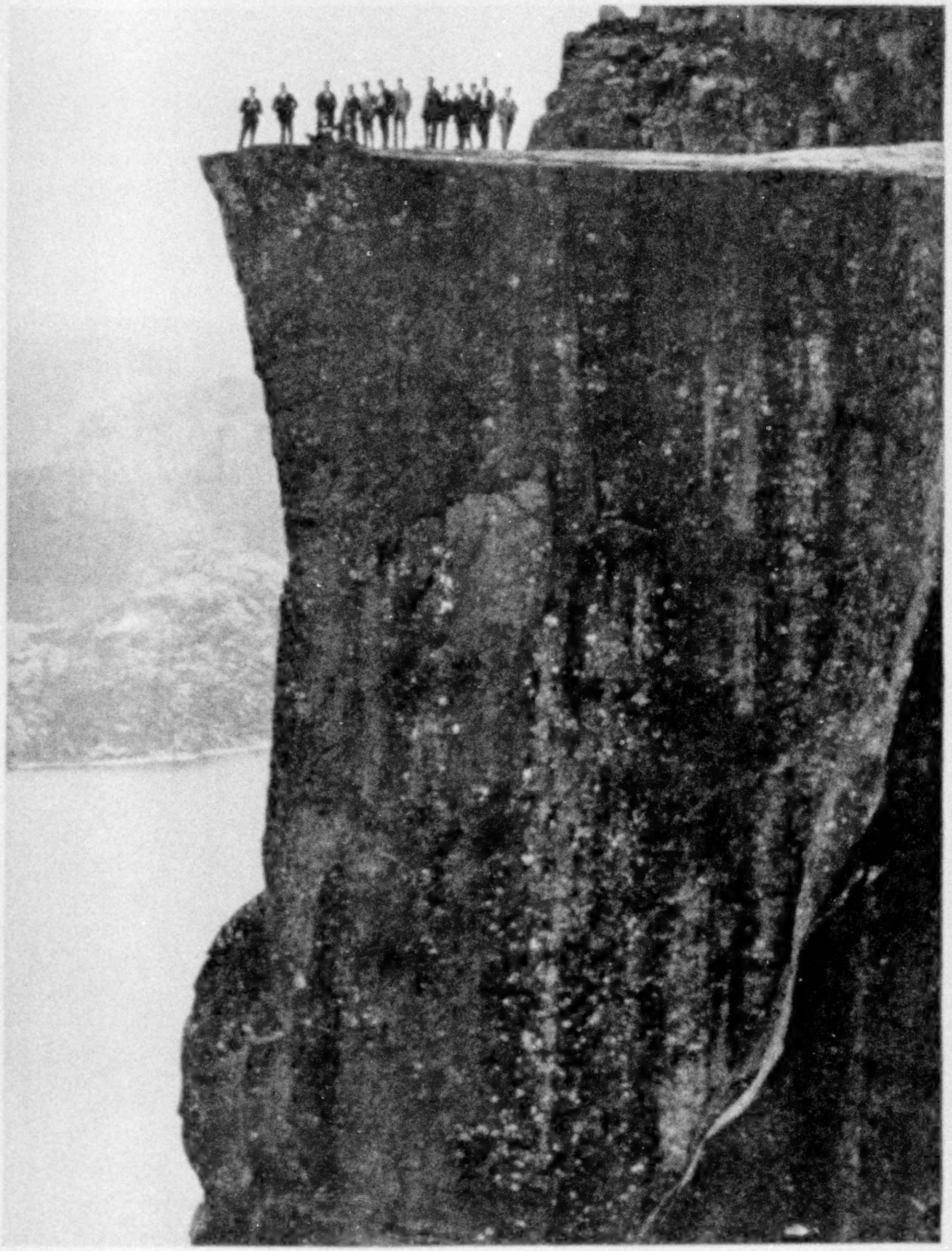
The Norwegian flag flies on ships in all the seven seas and in all ports of the world. Norway possesses the world's greatest per capita marine tonnage. As neutrals in the World War the Norwegians suffered the fortune of the innocent bystander who gets hurt. Half their merchant vessels were sunk by submarines and some 2,000 Norwegian sailors perished.

The country's shipping recovery has been dramatically sudden. Despite its catastrophic losses the present tonnage shows an increase of 25 per cent over prewar. The new ships are of better quality, too. The Norwegian motor-ship fleet ranks second in the world. Laggards in modern industrialism, the Norwegians buy their ships from England and Germany cheaper than they can build them. Ship purchases constitute one of the largest items in Norway's international trade balance.

SEA ADVENTURE ATTRACTS THE NORWEGIAN

The ubiquitous, semi-amphibious Norwegian sailor is found where sea adventure calls. Seven members of Admiral Byrd's Antarctic expedition are Norwegians. The pilot of the Byrd plane that flew across the South Pole was a Norwegian. The crews of our Pacific halibut fishing boats are chiefly recruited from Norwegians. Craving the stark realities of life, the Norwegians have little use for the insipidities of drawing-room life. Like the Finns, they bear upon them the marks of struggle, privation, endurance. Their literature and painting from early times interpret the stern realities of struggle with titanic forces. Their men of letters hold with the British poet:

> "We are not May-day masquers, thou and I!
> We have lived deep life,
> We have drunk of tragic springs!"



Photograph from Sven Naerbo

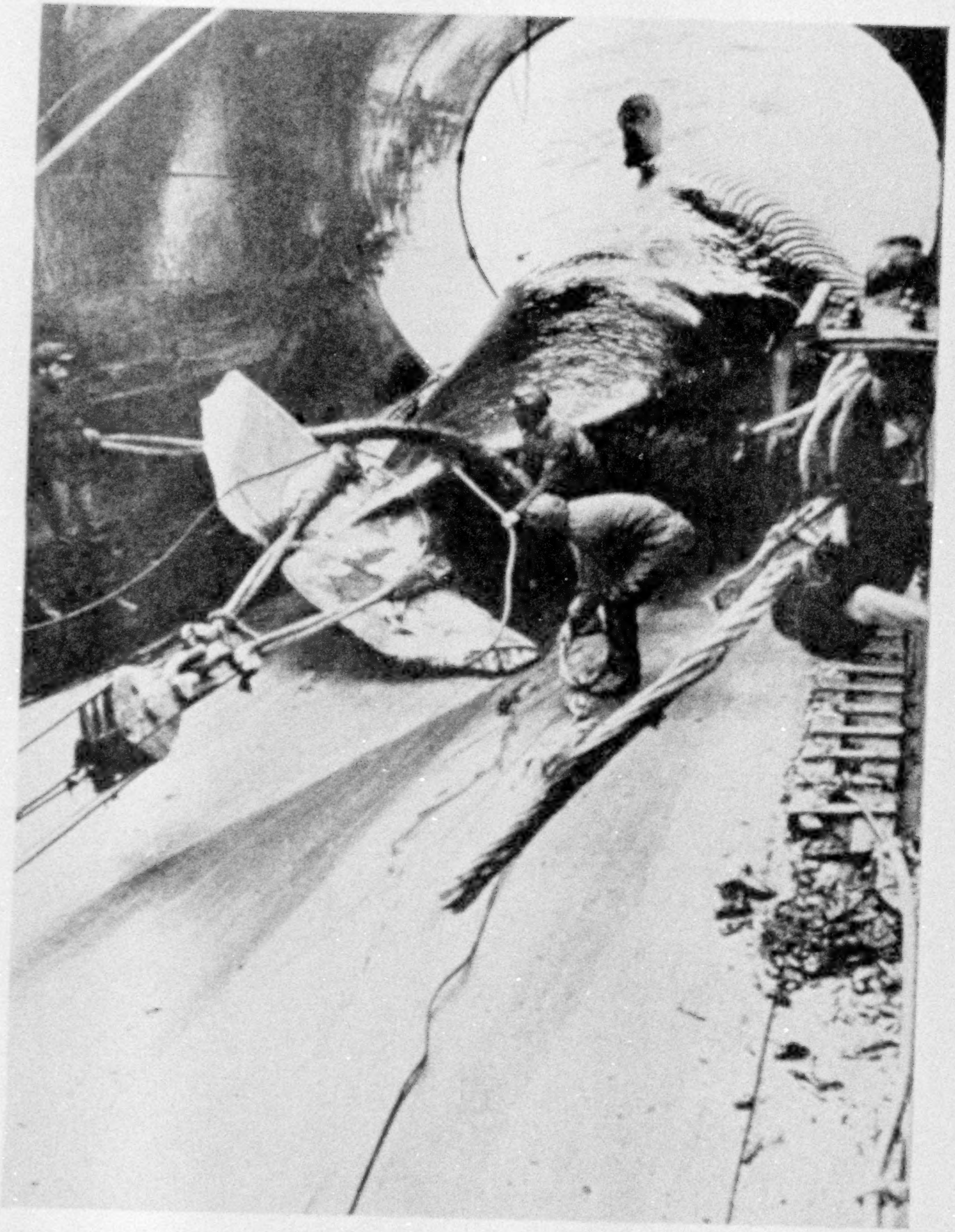
THE PULPIT ROCK OF LYSE FJORD

Southwest Norway's most beautiful and mysterious fjord has other curious formations besides this. The inlet itself is 25 miles long and one mile wide, and is inclosed by vertical or overhanging rock walls.

Photograph by Charles Martin

DR. FRIDTJOF NANSEN ON HIS LAST VISIT TO WASHINGTON

On February 5, 1929, the distinguished Norwegian explorer, then in the National Capital, visited the headquarters of the National Geographic Society. At his left is Dr. Gilbert Grosvenor, President of The Society.



Photographs by Pacific and Atlantic

SWALLOWING A WHALE THROUGH A HOLE IN THE BOW

A few of the newer whaling ships are equipped with a forward hatch, through which the huge body is drawn, tail foremost, by an electric windlass direct to a cutting-up floor on board. The steel gate, which closes the hatch hermetically, can be lifted in ten minutes. It is strong enough to withstand the pressure of Antarctic ice.

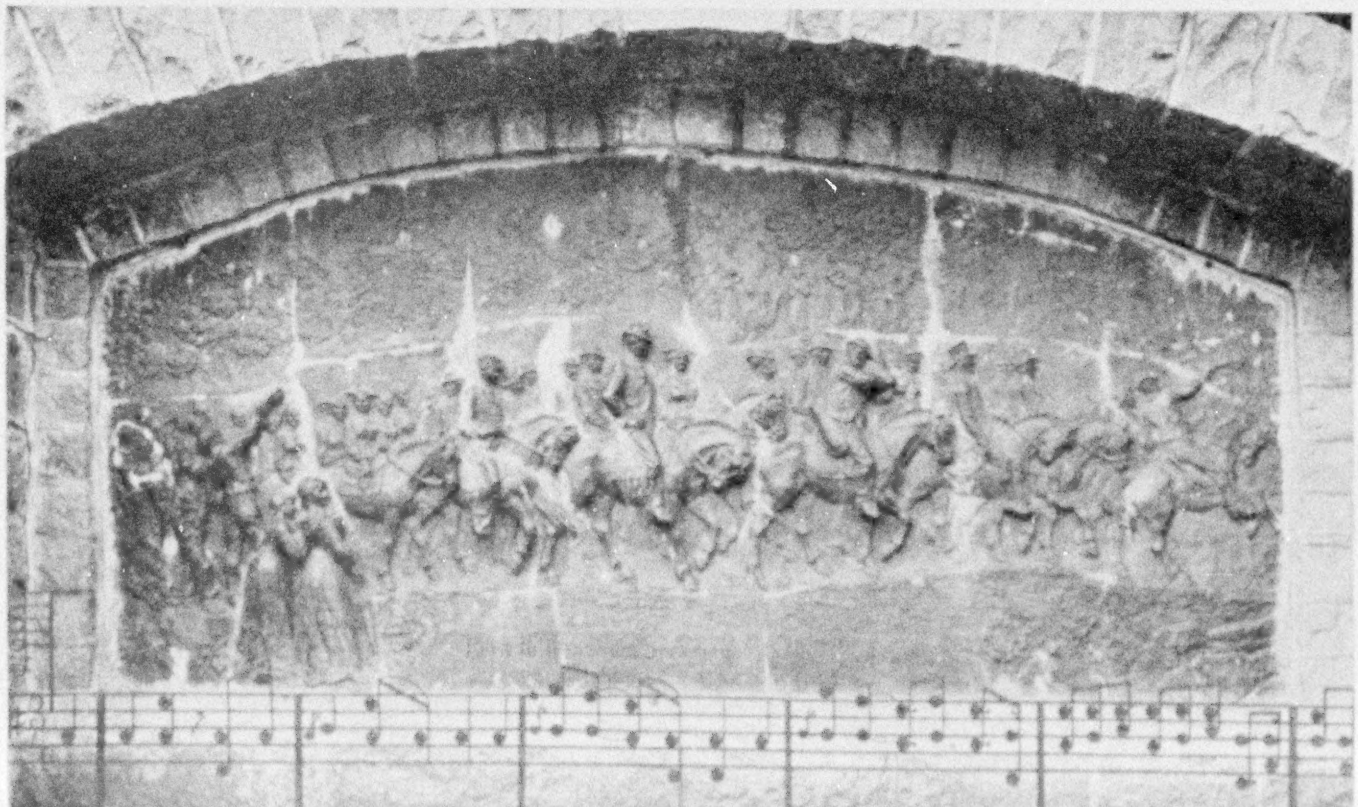
EVERY PART BUT THE "BLOW" IS UTILIZED

Most of the floating factories have flensing platforms alongside, where the whale is stripped and cut up. An efficient establishment of this kind can slice and chop a whale in two hours. Whale oil is used for soap, butter substitutes, for currying leather, and in batching flax and jute; also as a lubricant for machinery.

Photograph by A. B. Wilse

RJUKAN, ONE OF THE NEWEST CITIES IN NORWAY

Where the misty falls of Rjukan now lend their energy to the production of calcium nitrate, in 1907 there stood only a small farm.



Photograph by G. Heurlin

A MEMORIAL TO A RURAL MUSICIAN

This stone, on a bridge at Voss, shows the man (right center) riding a horse and playing his fiddle. Norwegian national music reached its height with Edvard Grieg, whose work was declared by Ole Bull, Norway's "violin king," to be the finest musical representation of Norse life yet attempted.

FOR BETTER OR FOR WORSE: A WEDDING PARTY AT ÖYE

The fiddler heads the procession and the bride wears her wedding crown (see, also, Color Plates V, XIV, and XVI).

Photographs by G. Heurlin

NOW A MUSEUM TREASURE, BUT FORMERLY A CENTER OF FAMILY LIFE

The history and evolution of the Norwegian home, together with allied peasant arts and culture, can be studied in the Bergen Museum's fine collections, and in the open-air museums at Lillehammer (see Color Plate XII), and Bygdö, near Oslo. Norwegian peasant arts have influenced the national forms of decoration.

Photograph from Dr. Hugh M. Smith

THE COD FISHERY IS AS IMPORTANT TO NORWAY AS IT WAS TO EARLY MASSACHUSETTS AND NOVA SCOTIA

The principal cod-fishing grounds are north of Nidaros (Trondhjem), along the Lofoten Islands and the Finmark coast. After the cod are brought ashore they are split open, gutted, and dried, either as *törfisk*, which are merely dried, or as *klipfisk*, which are also salted before being dried on the rocks or ground, as here, along a beach of the Lofoten group.

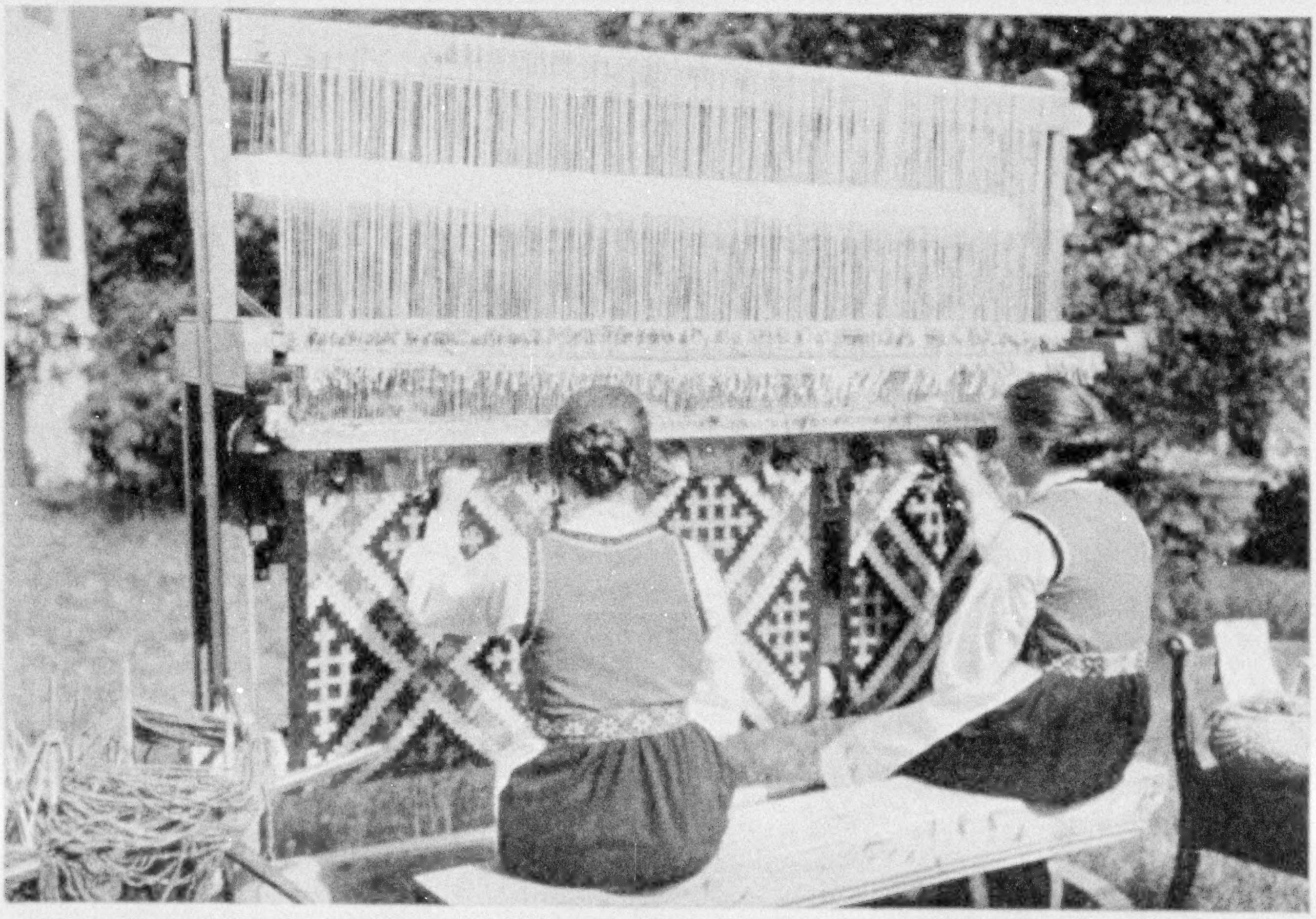
Photograph by De Cou from Galloway

RAIN OR SHINE, BERGEN EVER TURNS ITS THOUGHTS SEAWARD, TOWARD FISHERIES AND SHIPPING

Photograph by De Cou from Galloway

A LAPP FAMILY SEES THE SIGHTS IN TROMSÖ, METROPOLIS OF NORTHERN NORWAY

The Lapp country extends through northern Norway, Sweden, Finland, and into western Russia. The Lapps are a hardy, enduring people, noted since ancient times for their use of the ski, for which they were known as "Skrid-Finnen," or "sliders."



Photograph by G. Heurlin

NORWEGIANS RETAIN THEIR LOVE FOR THE ARTS AND CRAFTS OF THE PEOPLE

These women of Mundal (see, also, Color Plates IV and VIII) utilize popular designs for the tablecloths and pillow covers which they weave for the tourist trade.

Photograph by De Cou from Galloway

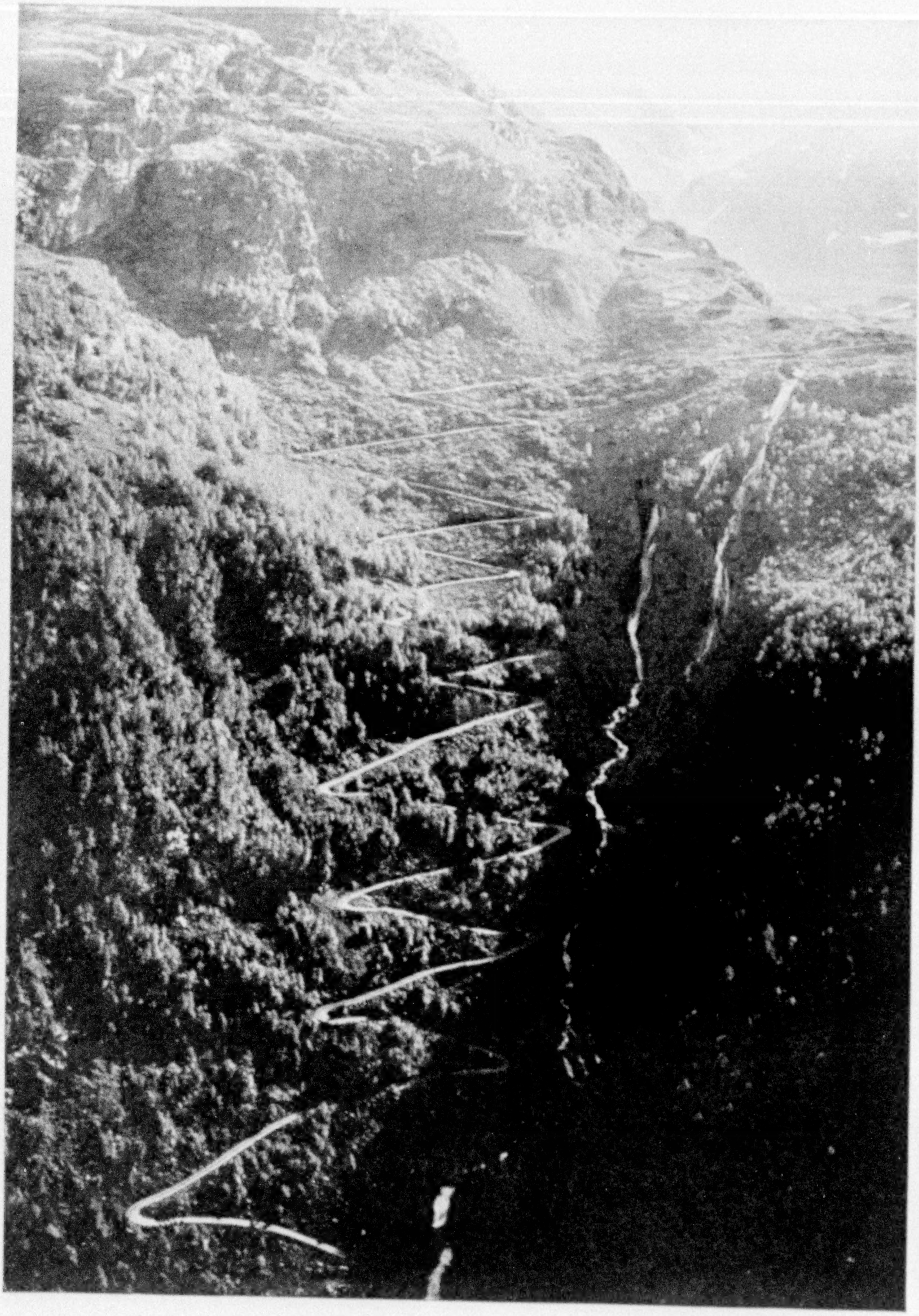
HAMMERFEST ENJOYS A SHIP'S BAND CONCERT ON SHORE

Characteristically, the two principal gods of the pagan Norsemen were Odin, God of Battle, and Thor, God of Thunder, while Valhalla was conceived of as a heaven prepared for souls that perished gloriously in battle.

It is vain to seek to distinguish between the diverse Scandinavian breeds which a thousand years ago, under the generic name of Norsemen, burst all bounds. Their piratical craft crept along the coasts of Britain, Iceland, Gaul, Ireland, Russia, Italy, Sicily. The ferment of Northern peoples in the Middle Ages was like insects seen under the microscope devouring one another in a drop of water.

Waves of living men, the outer rim of population, were thrown off by irresistible centrifugal forces. To the cultured and the Christian peoples of Europe, these pagan marauders were the scourge of God sweeping down from the North, the land of night and wonder, the terrible unknown. The outpourings of Norsemen in the ninth and tenth centuries may be compared to the earlier irruptions of the Germanic peoples that overran Gaul and later the Roman Empire. From pirates they became colonizers. Their outpouring and dispersion seem, in many instances, to be a clear case of redundant population perpetually outrunning sustenance; successive swarms pouring out from the common hive, which could no longer support them.

It reminds one of the march of the lemmings. These little rodents with yellowish-brown fur inhabit the mountains of northern Scandinavia, where they live upon the luxuriant grasses and herbaceous plants. But finally their amazing fecundity outruns food supplies. They migrate in great troops, proceeding seaward, swimming rivers, crossing mountains, pressing forward with invincible



Photograph by A. B. Wilse

HERE ENGINEERS HAVE TRIUMPHED OVER CLIFF, RAVINE, AND WATERFALL

The last part of the road to Myrdal, the highest point in the Flaams Valley, ascends in a zigzag of 17 curves.

obstinacy until finally they reach the outer marge of land. Still striking seaward, they plunge into the ocean and in a last struggle sink beneath its surface, thus pathetically redressing the balance between population and sustenance.

Taking their hue, like the chameleon, from their surroundings, the Norsemen in Russia became Russians; in France, Frenchmen; in England, Englishmen; in Ireland, Irish; in Italy, Italians. As pagans turned Christian, they thrust eastward to Palestine and broke fruitlessly against the power of the infidel Saracens. Foreign soil drank their blood, covered their bones, and the name "Norman" in the Mediterranean countries, where they played so dramatic a part, is a synonym for the transiency of earthly achievement and for great names and splendid memories washed away. It was their fate to conquer alien peoples and to be absorbed by them.

In 1874 Icelanders celebrated the one thousandth anniversary of the settlement of Iceland by Norsemen. Greenland was colonized about a century later. The shores of America had been reached by Leif Ericsson early in the eleventh century, or more than 400 years in advance of Columbus.

In the atavistic Norwegians of our own day outcrops the hardihood of remote ancestors, who, without chart or compass, braved the twin perils of stormy seas and polar ice. In recent years the Norwegians raised their flag above some desolate islands in the far Antarctic seas. These desolations may come in handy some day as bases for whalers.

Nature, bestowing with one hand and robbing with the other, delights in awarding consolation prizes, slyly planting gold mines in Death Valley and potash salts in the Dead Sea. Spitsbergen (Svalbard), that island of goodly proportions, three times the size of Massachusetts, is the most northerly habitation of white men on the globe. Polar bears, walruses, and Arctic puffin birds appreciate Spitsbergen as a convenient summer resort, but the island would seem to have no human value beyond furnishing a jumping-off place for North Pole adventurers. Yet the resourceful Norwegians have discovered there what they entirely lack in the home country, deposits of steam coal. Despite the handicaps of arctic cold and isolation, Spitsbergen helps in a small way to compensate Norway for lack of fuel.

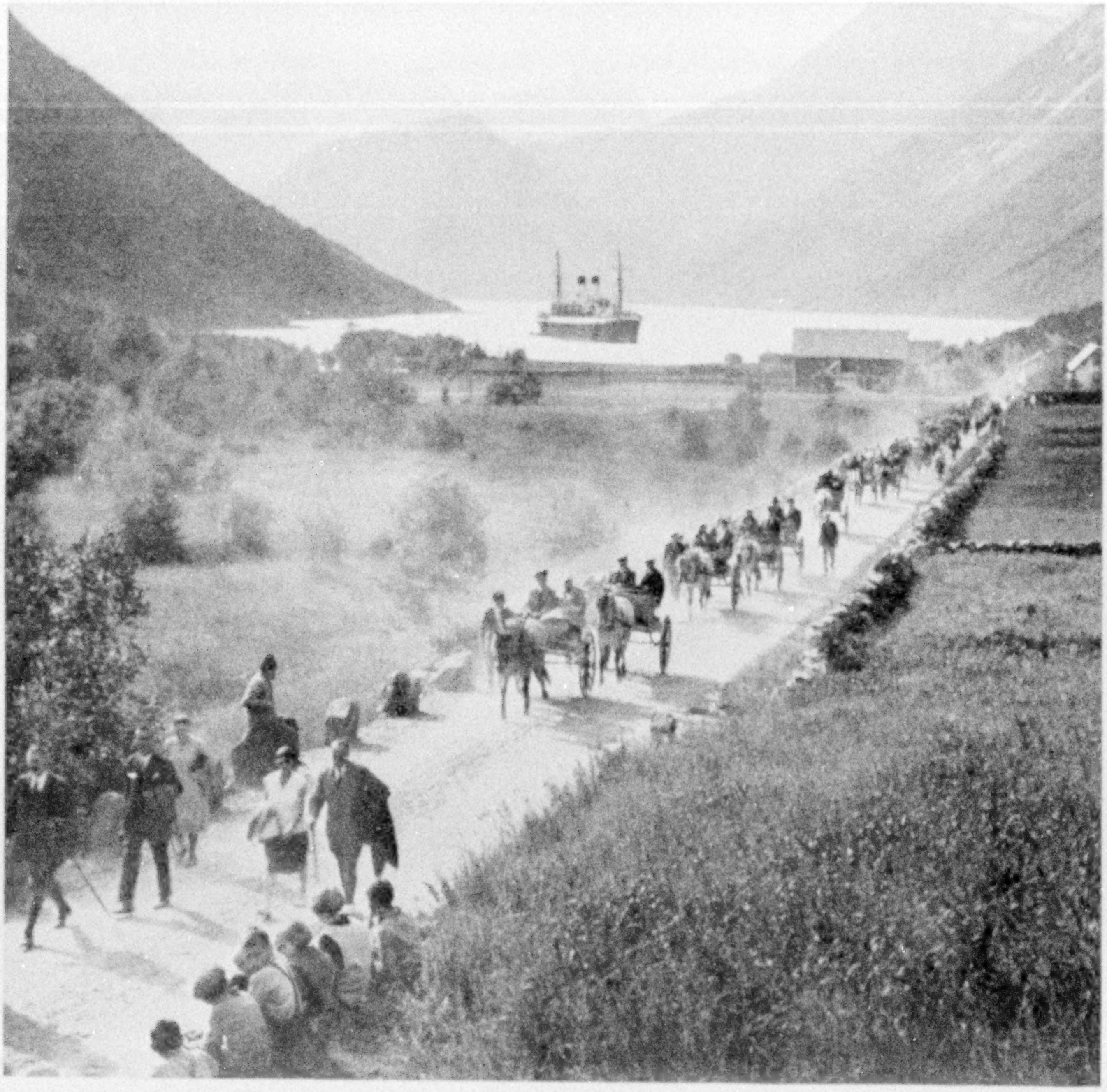
About 1,200 Norwegians live in Spitsbergen the year round, giving the island a population density of one-twentieth of a person to the square mile. Spitsbergen is about as well supplied by Nature with the refinements, facilities, and opportunities of civilization as a camp of pygmies in the equatorial jungles of Africa.

NORWEGIANS HAVE MADE RECORDS IN POLAR EXPLORATION

As a boy, the writer got almost by heart the narrative of Dr. Elisha Kent Kane's expedition to Greenland. William Morton, one of his men, reached latitude 80° 35′. The northern coast of Kings Bay, Spitsbergen, where Byrd hopped off for the Pole, is in latitude 79°, or only 110 miles south of the northernmost point attained by Morton. The highest point north reached by the ill-fated Sir John Franklin Expedition was latitude 77°. It takes some imagination to envisage a thousand or more Norwegians living in a country whose northern section lies within 700 miles of the North Pole.

For 200 years polar exploration has been considered the greatest of all travel adventures. No wonder it carries an appeal to Norwegians, among the greatest of the world's adventurers by water! Peoples are explorers of a sort according to their own character and genius. Some men explore the mysteries of the universe by sitting still in a laboratory. They are the scholars. But how about the men of action, the restless, inquiring, pioneering people, eager to push back the veil that hides the unknown from the known?

The expeditions of the American explorers, Peary and Greely, achieved the uttermost in 19th century exploration by sledge teams, to be eclipsed by Fridtjof Nansen, a Norwegian, who deliberately let his ship get frozen in the Siberian ice and, after drifting toward the North Pole, set out on foot across the ice and reached the highest latitude yet attained by man (some 261 miles short of the pole). Later, another Norwegian, Capt. Roald Amundsen, established golden records in polar research and geographical explora-



Photograph by G. Heurlin

WHERE SCENERY MAKES AMENDS FOR DUSTY ROADS

The steamer has just landed tourists at Öye, from whence they proceed to Hellesylt, near Geiranger Fjord (see, also, Color Plate XV). Some go in automobiles or in *stolkjærrer*, if they are lucky, but the remainder must walk.

tion. He negotiated the Northwest Passage and was first to attain the South Pole. In 1926, with an American, Lincoln Ellsworth, he flew from Spitsbergen over the North Pole and landed in Alaska. Later, this intrepid soul lost his own life on an Arctic mission of mercy. His plane, clearly overloaded, it is said, was swallowed up in the gray mists of the polar sea and was seen no more.

The Norwegians are the northernmost and the southernmost workers of the world. Their operations cover a wider range than the flight of the Arctic tern. This past winter upward of 10,000 Norwegians have been working in Antarctic seas close up to the great ice barrier. This summer just as many will be working in Arctic seas on the outskirts of the polar ice cap. They carry on their humdrum business day in and day out at latitudes that would have appalled the boldest polar explorers a generation or two ago.

STRANGE TEMPERATURE ANOMALIES AFFECT LIFE HERE

The striking and unique feature of Norway's climate is the presence of the strangest temperature anomaly of any important inhabited country in the world. Norway's isothermal lines dip sharply to the south. The January temperature in

© George Long

LOEN LAKE WAS THE SETTING FOR A TRAGEDY

On January 15, 1905, a stupendous crag detached itself from the mountain behind the horses and plunged into the lake. It caused a mighty wave, which swept round the shore, obliterating farmhouses and drowning 61 persons. It also picked up a small steamer and deposited it on the mountain side 300 feet above the lake.

Hammerfest, the northernmost city of the world, is about that of Berlin, Germany, 1,300 miles to the south, and Bucharest, Rumania, some 1,815 miles south. Again, the temperature of Oslo, the Norwegian capital, is the same in January as that of Hammerfest, 835 miles north. The phenomenon is, of course, explained by the waters of the warm Atlantic drift which bathe the western coast of Norway.

These climatic eccentricities bear an intimate relation to Norwegian agriculture. In Norway farming within the Arctic Circle is by no means a desperate enterprise. As the snow retires, vegetation quickened by long days of sunlight springs up apace. Even dairy farming prospers within the Arctic Circle, despite the accepted notion that only reindeer thrive in these latitudes.

In truth, Norway is something of a cow country. The cattle population of all Europe stands in the ratio of one to five and a half human beings. In Norway the ratio is one to two and a half, or about the same as in the United States. This should impress the African chief who, after hearing a British missionary's rhapsody about the power and majesty of Queen Victoria, gravely inquired, "How many cows does she own?"

Norway, unlike most other European countries, produces no tobacco or sugar beets. The agricultural pyramid rests upon small farms. Peasants own land as independent proprietors, a condition in contrast to eastern European agriculture, with its complement of big estates, petty farm laborers, squalid poverty.

Norway has made great strides, political and economic, since the turn of the century. The three Scandinavian countries dominated by Denmark were tied together by the union of Kalmar (A. D. 1397). This union, galling to the Norwegians, was

Photograph by Donald McLeish

RAW MATERIAL FOR NORWAY'S LUMBER, PULP, AND PAPER INDUSTRIES

The forests constitute one of the country's chief natural resources, almost 29,000 square miles being covered with trees, chiefly pines. As a consequence, practically all country houses are built of wood. The Raundals River, eastern feeder of Vangs Lake, passes extensive forest regions and logs are floated down here to Voss, where they are drawn to the sawmill. In the background is Voss's thirteenth-century stone church.

Photograph by De Cou from Galloway

HAMMERFEST LOOKS DOWN ON THE REST OF EUROPE

Its chief distinction is that it is Europe's northernmost city, but it is also an outfitting and supply depot for the northern fisheries and home of a fleet engaged in the capture of seals, walruses, whales, and polar bears. The period from May 13 to July 29, when the sun does not set, is Hammerfest's busiest time, with boats bustling off to the Spitsbergen and Kara Sea fisheries and the two narrow streets alive with bronzed seamen from five nations.

terminated on May 17, 1814, when Norway promulgated a liberal constitution and broke away from Denmark. The dynastic union with Sweden continued until 1905. Norway, politically progressive, came to regard the bond of common kingship as a clog, refused to live under the same dynastic roof with Sweden, and elected Prince Charles of Denmark King of Norway under the name of Haakon VII.

The Norwegian parliament (the Storting) may pass a bill over the King's veto. Without the age-long prestige and traditional prerogatives of the British King, the Norwegian monarch is little more than a dignified figurehead. It may be said that the President of the United States governs, but does not reign; the King of Norway reigns, but does not govern; finally, the President of France neither reigns nor governs. The Norwegians share with the Swiss the distinction of being the most democratic people in Europe. They are inflexibly independent. When it comes to interference with individual rights, they brook no nonsense.*

For ages the prosperity of Norway has been connected with the water rather than the land. Since the turn of the century revenues from the land seem to be increasing disproportionately over those from the water. In reality it is only a reassertion of the power of water over the destinies of the Norwegians.

Within the last 15 or 20 years water has played a new and important rôle in the development of the country. Cascades which tumble from snowy highland to the sea are doing for Norway what Alpine waterfalls are accomplishing for Italy. Both countries lack the prime requisite of modern industrialism, steam coal, but both are finding a substitute in the energy of falling water.

The genius of men is transforming this energy into heat, light, and power, and loading it on slender wires for transport over long distances, where it serves to turn the wheels of industry, glow in a reading lamp, or operate a dentist's drill in a defective tooth. Norway's potential hydroelectric resources amount to some fifteen million horsepower for every twenty-four hours, of which about one and three-quarter million horsepower have been developed. This country of small farmers and dispersed watermen is beginning to evince an inclination toward modern industrialism.

Such concepts as success and happiness defy exact definition. Success, I suppose, means getting what you want and being satisfied with it after you get it. Success may thus be attained by wanting less as well as by getting more. The Norwegians are people of simple wants. Luxuries are less essential to their happiness than one might believe.

One man's luxuries are another man's necessities. When mere animal wants are satisfied, tastes arise. Tastes in obedience to the collector's passion for the rare and unattainable spread out fanwise to infinity. It is not enough for Lucullus to satisfy his hunger, but he must have a ragout of nightingale tongues to pique his appetite. Trade couriers scour the jungles and wildernesses of the world to satisfy the insatiable wants of fastidious man: sturgeon roe from the Volga River; strange orchids from the upper reaches of the Amazon; rare perfumes from secluded valleys in the Balkan Mountains. Hell is the vision of unfulfilled desire.

All these give point to Ruskin's bitter epigram about the goading dissatisfactions of sophisticated people—whatever they have, to get more; wherever they are, to go somewhere else.

The Norwegians, hard-bitten, semi-amphibious, turn to the sea to eke out a living which the inhospitable land denies, but are satisfied with that living after they have earned it. They are of the Ulysses breed that ever, with a welcome frolic, takes the thunder and the sunshine; and this fact, aside from their qualities of good citizenship, is one of the reasons why so many thousands of them have migrated to, settled, and flourished in the United States.

* See, also, "Norway and the Norwegians," by Maurice Francis Egan, Litt. D., in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1924.

AALESUND IS A THRIVING COD-FISHING PORT

It occupies a few of the 150,000 islands known as the Skjærgaard (Skerry Guard), which fringe the mainland and increase Norway's coastline to 12,000 miles.

© National Geographic Society Natural-Color Photographs by Gustav Heurlin

VACATIONISTS ARE APT TO LINGER AT AANDALSNES

Walking, driving, boating, and fishing excursions in beautiful surroundings make it well worth a stay, and near by is the superb Romsdal, a valley of almost parklike scenery, silver birch, ash, and alder, and small lakes mirroring some of western Norway's most majestic heights.

© National Geographic Society

HAY MAKERS OF BALESTRAND

The farmer's womenfolk work side by side with the men and boys in the fields. The narrow edges of the fjords yield some hay, but most of it comes from the steep uplands. Norway's acreage in hay is three times larger than that of all other crops combined.

Natural-Color Photographs by Gustav Heurlin

THEIR FORBEARS WERE PIONEERS IN AMERICA'S NORTHWEST

In proportion to its population, no country except Ireland has given the United States more citizens than Norway. Since the first small immigrant group arrived on the *Restaurationen* in 1825, their number has swelled to 2,500,000—almost as many as in Norway itself.

© National Geographic Society

Natural-Color Photograph by Gustav Heurlin

BALHOLM IS LINKED WITH THE SCENE OF ONE OF NORWAY'S GREATEST SAGAS

Together with its own natural beauty and delightful situation, the town is only three miles from the ancestral home, across the fjord, of Fridtjof, the legendary Viking war lord whose saga is one of the world's finest stories of love, chivalry, fortitude, and honor. At Balholm is the grave mound of King Bele, whose daughter loved Fridtjof.

LOFTY PEAKS LIFT SNOWY HEADS ABOVE PLACID WATERS

The 6,000-foot mountains, rising sheer, create a lasting picture of fjord scenery which, together with the Balestrand district's pleasant orchards, flowery fields, and forested hills, attracts many visitors and artists.

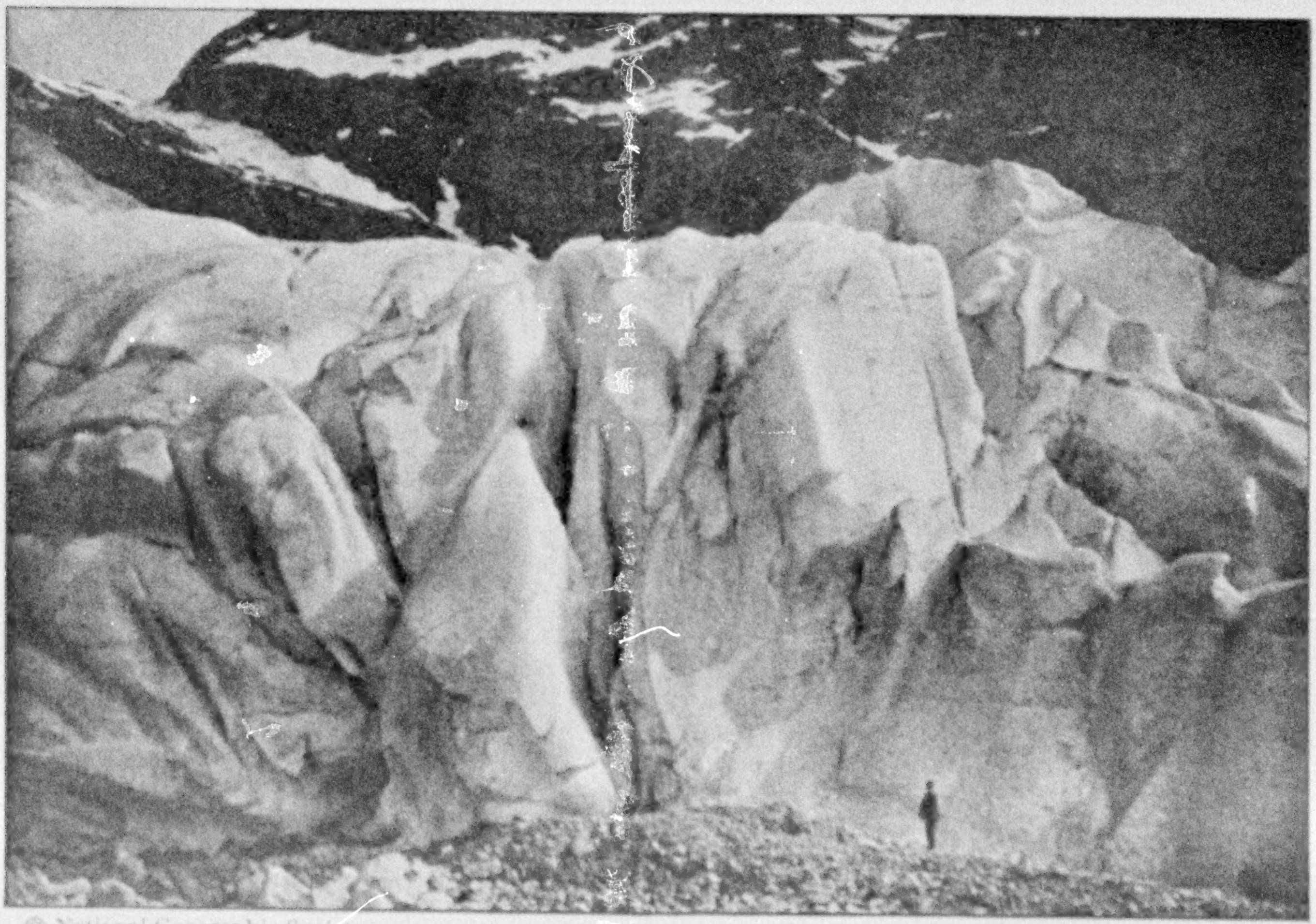
© National Geographic Society Natural-Color Photographs by Gustav Heurlin

LILLEHAMMER HAS AN OPEN-AIR MUSEUM

The collection of Norse houses, barns, granaries, and chapels is one of the finest in existence. These old houses are from Lom, but many were brought from the Gudbrandsdal, a fertile and prosperous valley. One known as Peer Gynt's *stue* (cottage) dates from about 1500, and contains old weapons.

CATTLE GRAZE ON THE VERY EDGE OF BÖIUMS GLACIER

In summer, farm girls drive their cows and goats to upland pastures and settle down in huts for two or three months of butter-and-cheese-making. Flowers spring up where this glacier, near Mundal, leaves off.



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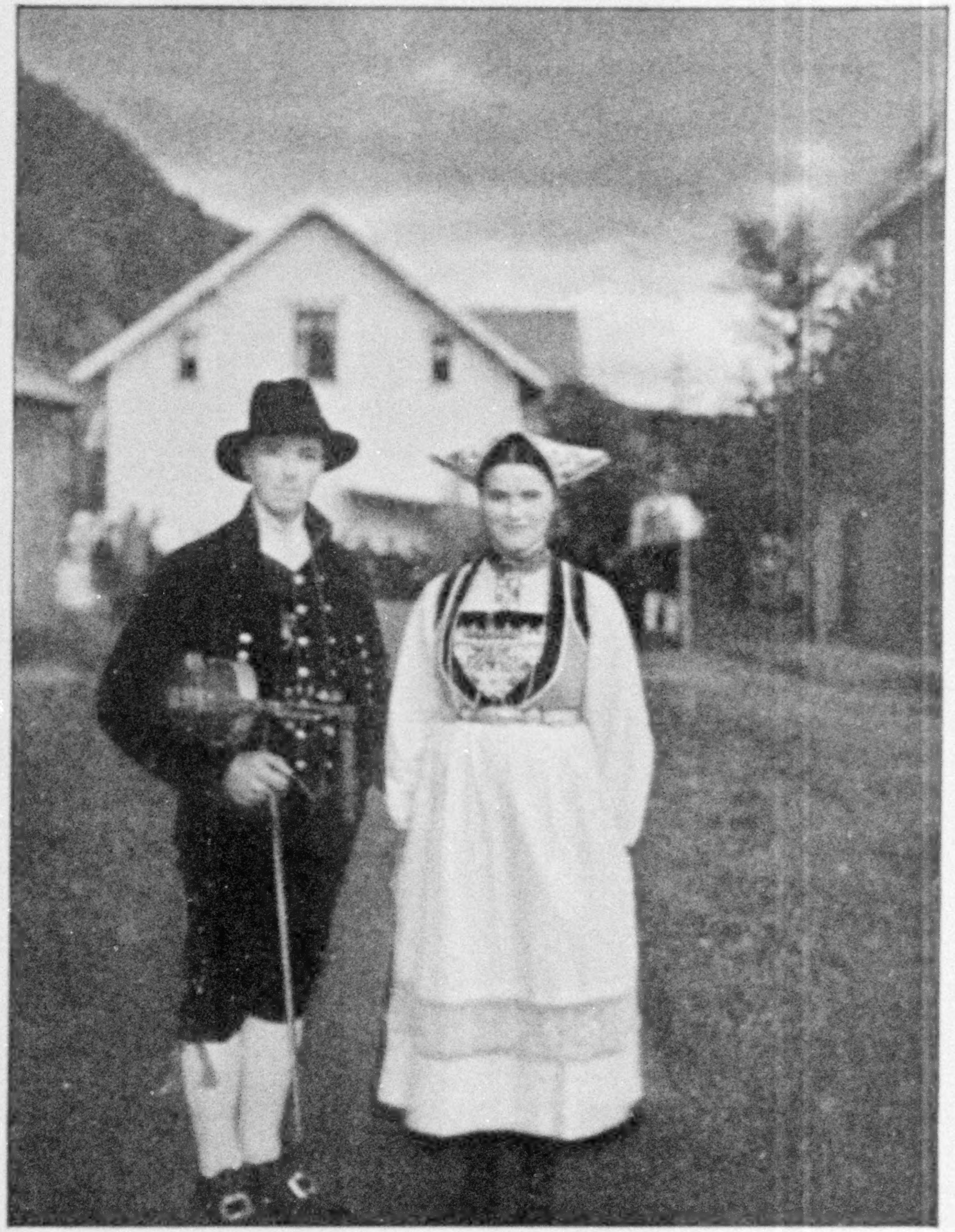
REMINISCENT OF SCANDINAVIA'S ICE AGE

Most of the peninsula's glaciers occur in Norway, where they cover an area of about 2,000 square miles, as compared with Sweden's 135 square miles. From the Jostedalsbre region (see also Color Plate IV) various glaciers such as this one near Mundal run to within 150 to 200 feet of sea level.

© National Geographic Society

WHERE KNEE-LENGTH IS STILL THE STYLE

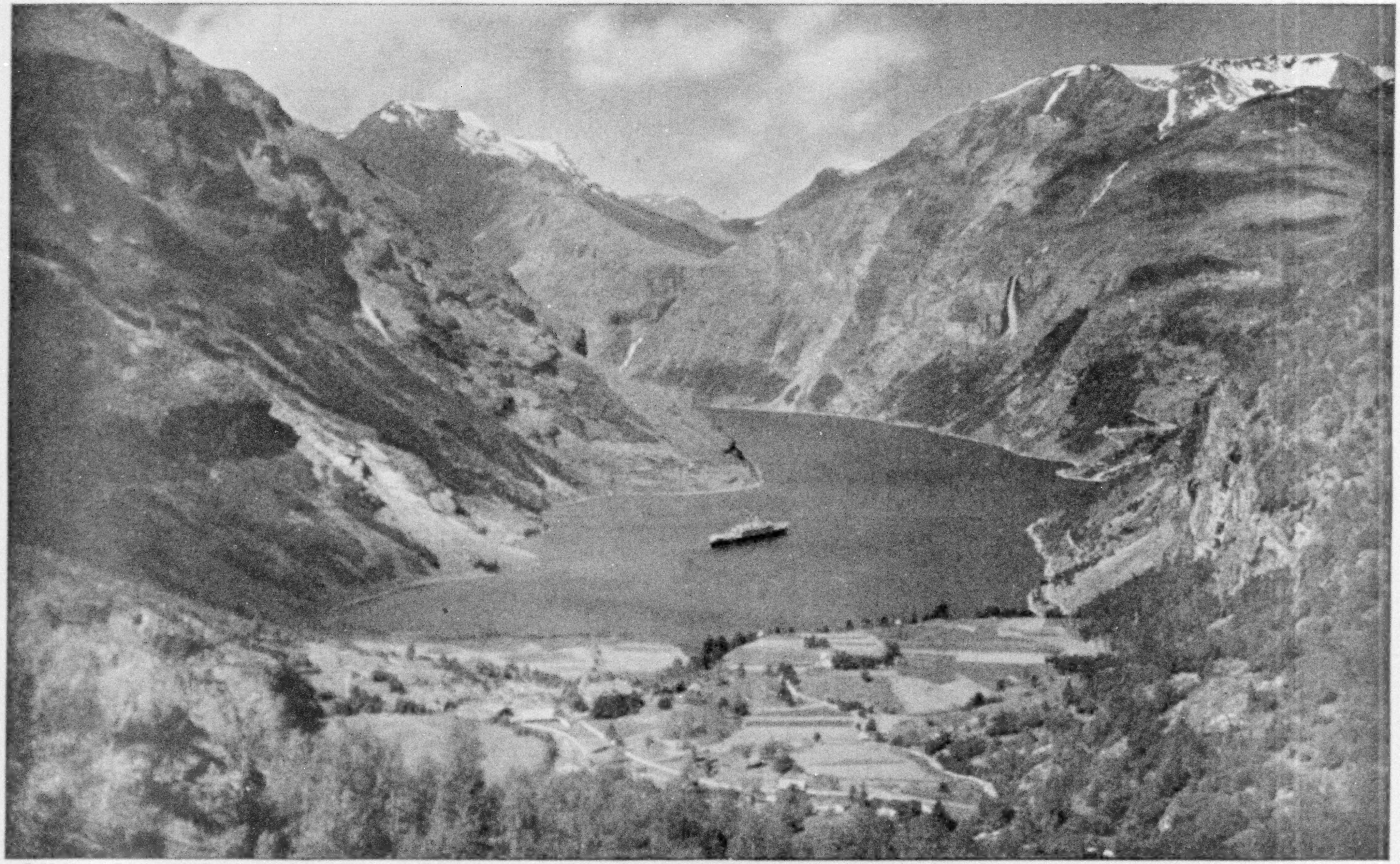
Natives of the Telemark district in southern Norway have a peculiar dress and customs to which many cling. They also gave the Nation some of its best-loved fairy tales and folk songs, and a literary giant, Ibsen.



Natural-Color Photographs by Gustav Heurlin

NO WEDDING FUN WITHOUT A FIDDLER

His arm must never tire, his enthusiasm never flag, for the dancing, feasting, and merrymaking at Voss may keep up for several days. No country wedding would be thought complete without him.



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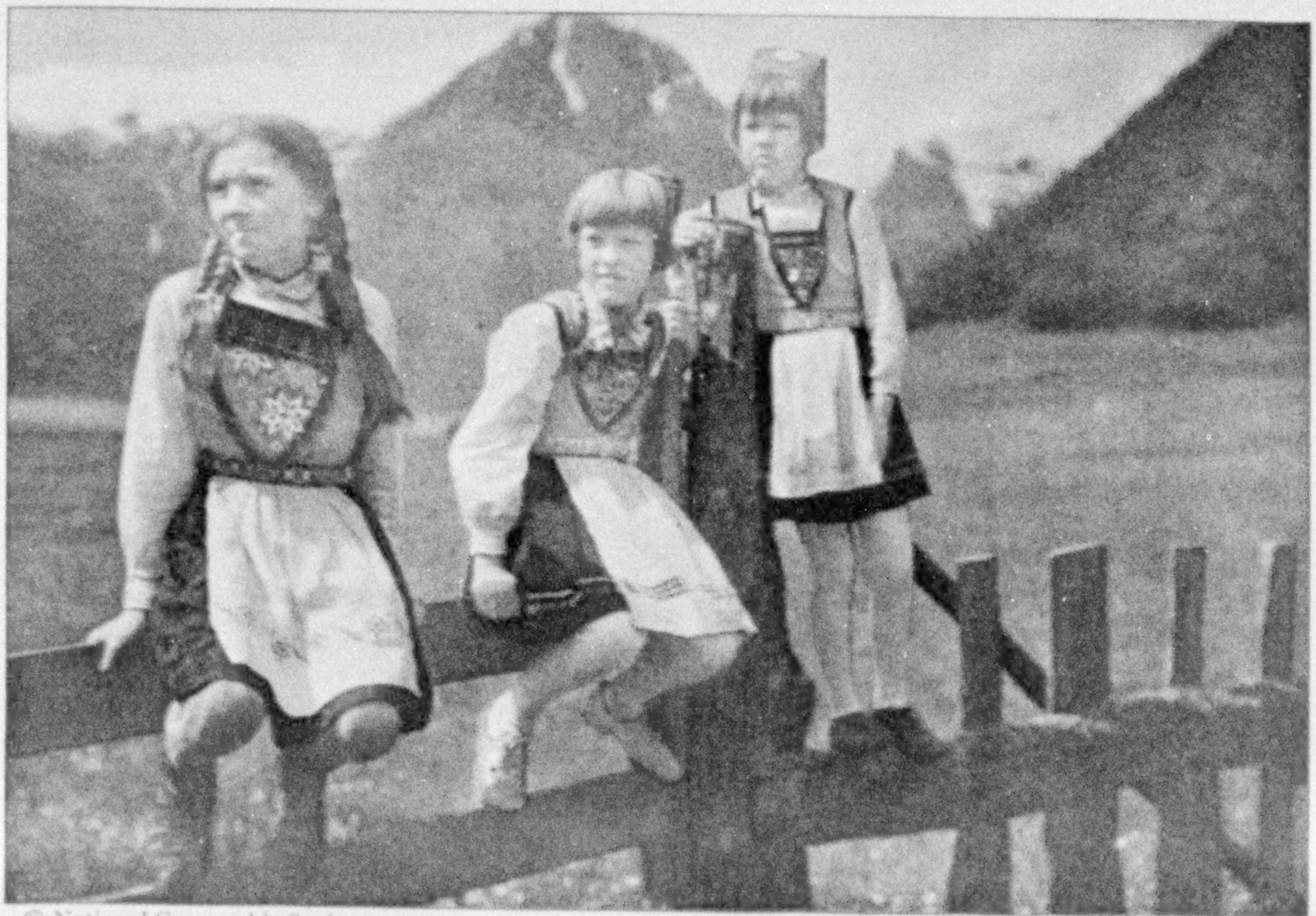
Natural-Color Photograph by Gustav Heurlin

LEAPING WATERFALLS FESTOON THE SHORT BUT AWESOME GEIRANGER FJORD

The inlet is only 11 miles long, and from 200 to 400 yards wide, but the mountains soar perpendicularly to heights of 3,000 and 5,000 feet along the gorge, and in some places actually hang out over the water. Down the steep cliffs plunge hundreds of waterfalls, gauzy and silky, or roaring. Geiranger basin and Merok village, a resort at the fjord's head.

ONLY THE WOMEN LEND COLOR TO THE MARRIAGE FEAST

Most of the men came in sober modern dress to the wedding at Voss (see also Color Plate XIV, right). They are now passing from mouth to mouth a large wooden container holding about two gallons of beer.



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Natural-Color Photographs by Gustav Heurlin

"HERE COMES FATHER"

The youngest of these three children confided that she understood English much better than Swedish (the language of the photographer), and the conversation was thenceforth conducted in that neutral tongue.

NORTH AMERICA'S OLDEST METROPOLIS

Through 600 Melodramatic Years, Mexico City Has Grown in Splendor and Achievement

By Frederick Simpich

"LOOK up there at Popocatepetl! . . . Think of Cortez letting a man down into that crater on a rope to get sulphur for gunpowder. . . . Where was it they stoned Montezuma?

"Imagine only 500 Spaniards, with a few horses and clumsy cannon, conquering the whole Aztec race!"

Into Mexico City swarms the travel stream, mostly Americans. With the informality of eager sight-seers, they question any one they meet, and comment freely on what they see. "Our Ambassador looked tired when we called. They say Mexico City is the hardest post in our foreign service."

"When is the bullfight?" asks a Chicago Board of Trade delegate, meeting a Rotarian from Texas. "And I want to see where Gen. Winfield Scott's men put scaling ladders against Chapultepec. How could the Aztecs tell time by that big stone calendar in the museum?"

"My daughter," says a man from Missouri, "is here with 600 other American students for summer classes. The University is very old. It was started in 1553. Think of that—before Jamestown, Plymouth Rock, or even St. Augustine was heard of!"

"This is the oldest big city in the Western Hemisphere," volunteers a professor of history, slyly pocketing a guidebook. "When the Spaniards first came they found here a rich city of perhaps 300,000 people, with an emperor's court, luxurious palaces, lawsuits, poetry, music."

PAST AND PRESENT, MEXICO'S CAPITAL IS UNUSUAL

Mexico City is an astonishing place. Things have happened here so strange and unusual that were they not set down in authentic records they would tax all belief. It looms largest in the mind of the average American because of its supremely important diplomatic relations with Washington, growing out of the many old, unsolved questions between the two republics; but in modern, superficial aspects it is not unlike some other Latin-American capitals. It has old palaces, parks, paintings, and libraries; colleges, convents, great newspapers, and broadcasting stations; likewise diplomats, soldiers, traffic jams, and jails. It buys and sells, and makes soap, soda water, shoes, shirts, candy, cigarettes, furniture, machinery, leatherware, patent medicines, and textiles.

Sit in one of its theaters and watch a "news reel"; swim, dance, play golf or tennis at a club, or land at Balbuena Field in a passenger plane from El Paso, and—except that you hear Spanish instead of Yankee chatter—you might as well be in Denver. In fact, the high top light and near-by snow peaks much resemble the scenic settings of Colorado.

But under all this standardized modernism is much more—a blend of Spanish and Aztec forces that goes back 400 years. You see signs of this, now and then, in flat, three-cornered Aztec faces moving stolidly in street crowds. Probe the mystic past and you find that certain historic events staged here swayed the destiny of our continent for centuries. Here Christianity got its first foothold in North America, when idols were turned into altars and a glittering but cruel pagan culture yielded stubbornly to European civilization. Here America's first sheet music and first book were published. Here its first money was coined. And here, too, appeared the "Flying Mercury." Some have styled it America's "first newspaper," but more likely it was but a pamphlet on history or political discussion. Cortez himself built the first sugar mill, not far from Mexico City, and his men introduced many domestic animals, fowls, and farm methods new to the Aztecs. In fact, the coming of Cortez set in motion economic and other forces that to this day are felt, from California to Panama. That is one reason why, now, more than two million Mexicans live in the United States.

Photograph by Fairchild Aërial Surveys

FROM RUINS OF A CRUEL AZTEC SANCTUARY ROSE THE "MEXICAN ST. PETER'S"

Much of the débris of the pagan *teocalli* of Tlaloc-Huitzilopochtli (see text, page 48) was used as building stone for the first Christian church in Mexico, which in the beginning of the sixteenth century occupied the site of the atrium of the present structure. The cathedral to-day rests upon a foundation composed almost entirely of the remains of the Indian shrine, including many sculptured images. Nearly seven generations had a hand in constructing the huge edifice; hence some architectural irregularities. It was completed in 1667. The open space in the foreground is the Plaza de la Constitución.

Photograph by Clifton Adams

GROUPS AT THE FLOWER MARKET NEAR THE CATHEDRAL EMULATE THE LILIES, AND TOIL NOT

A delightful place to rest, where myriad blossoms scent the air. If the mischievous urchin at the left succeeds in his design of poking the pet rabbit into activity, the boy taking his ease in the shade of a huge basket will suffer rude awakening from his day dreams.

Photograph by Holmes from Galloway

SHOP WINDOWS HOLD COUNTRY FOLK SPELLBOUND

Mexico City has many beautiful modern stores, but it is in the older streets, with their quaint places of business and crowds of leisurely Indians, that the interest of the visitor is most intrigued.

Imagine yourself in Mexico City that fateful November day in 1519 when Cortez came. (You remember his first arrival was peaceful; the dreadful 93-days of fighting, often hand-to-hand, came on a later visit.)

Montezuma, glittering with jewels and golden decorations, gorgeous in his royal robe and gold-soled sandals, comes out to meet Cortez and escort him into the island city.

Unseen till then by any white man's eye, the greatest city in North America is astir with pagan life. Could you have been here, walking and talking with Cortez and the Emperor Montezuma, you, too, would have marveled as the Spaniards did. To picture their astonishment, try to imagine into what excitement the whole world would be plunged to-day were it possible to discover a new continent, with a new language, a new race, and an emperor living in the splendor of Montezuma!

Down a broad, Fifth-Avenue-like thoroughfare Cortez and his amazed men followed the Aztec Emperor. Throughout the Venice-like city ran canals crowded with thousands of busy canoes laden with passengers, fruit, fowls, flowers, grain, and fuel. Stone buildings lined both paved streets and canals, and on a great plaza stood the palace of Montezuma's father, faced by a great *teocalli*, or sacrificial temple. When the Spaniards had rested in this palace, Montezuma rejoined them.

A few days later he led them to see the temple. With Cortez was a soldier named Bernal Díaz del Castillo. Later he wrote

Photograph by Holmes from Galloway

THIEVES' MARKET CAN BE SEEN FROM THE INSIDE, BUT NOT PHOTOGRAPHED

Roofs which make a virtual cave of the street are indispensable, for without them the midday sun would roast both merchants and merchandise. Here, where the lower classes come to trade, a weird assortment of wares is offered for sale (see text, page 84).

Photograph by Fairchild Aerial Surveys

HISTORIC CHAPULTEPEC CASTLE STANDS UNCHANGING ON ITS SUNLIT HEIGHT

Fugitive home of many great personages, this "White House" of Mexico is steeped in poignant tragedy; yet it impresses with its air of permanence and immutability. It was started in 1783 by the viceroy Gálvez, but was left unfinished. From 1842 it was [illegible] the [illegible] of the Mexican War, in which the United States forces under General Pillow suffered heavily before capturing it. Age-old trees rising all around it add to its grandeur.

Photographs by Ewing Galloway

ACROSS DON QUIXOTE FOUNTAIN, CERVANTES'S IMMORTAL HERO FACES HIS FAITHFUL SANCHO PANZA

In the pedestals supporting the statues of the knight errant and his inimitable squire are bookcases containing many volumes of the world's best literature. The lover of romance can find no more delightful place to sit and read than the bench beside this literary shrine in Chapultepec Park (see text, page 79).

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TRAGIC HISTORY DREAMS BEYOND THE GATEWAY OF CHAPULTEPEC CASTLE

Photograph by Clifton Adams

EXQUISITE TASTE HAS ADORNED THE STATE DINING SALON

Finished in beautifully carved Alsatian oak, with a fine ceiling and some splendid silver epergnes once owned by Maximilian, this room is one of the most attractive in Chapultepec Castle. Gobelin tapestries cover the panels in the walls, which are of metal.

"The True Story of the Conquest"; and, though ours is a story of Mexico City today, we can understand its nature better if we hear what its wonders were in Aztec times. In this teocalli, or temple, Cortez, Diaz, and certain other Spaniards first saw that monstrous idol, the god of war. "On each altar were two giant figures, tall and fat, writes Bernal Diaz. The first, on the right hand, was the statue of Huitzilopochtli, their god of war. Its face was broad and monstrous, with terrible eyes. Its body was decked with precious stones, gold, and seed pearl stuck on with a paste. About its body was a girdle made of great golden snakes set with precious stones, and in the god's hands were a bow and arrows.

Photograph by Holmes from Galloway

BEAUTY CHEERS ON THE TOREADORS

Like the ladies of King Arthur's court, who flung favors to the knights jousting in the lists, these Mexican señoritas, decidedly modern for all their Old-World mantillas, attend the bullfights and toss flowers to their favorite matadors.

SIX CENTURIES AGO AZTECS BUILT THEIR TEMPLES HERE

From the days of Diaz and Cortez till now, this same spot, where once stood the palace of Montezuma and the hideous heathen temple, has been famous in the city's history. Though no longer its geographic center, as in Aztec times, it is still the largest plaza in Mexico and also the most animated and absorbing crossroads in the Republic. "Plaza de la Constitución" is its modern name, though it is also known as the Zócalo, Plaza Mayor, and Plaza de Armas (see page 46).

Here, in 1325, the Aztecs first saw the symbolic snake and eagle and built their first temples. Here, in 1521, was staged one of the most bloody of all combats between Aztec and Spaniard, when Spanish prisoners of war were sacrificed to the idols. Undoubtedly more people were executed here than at any other spot on earth. More than 100,000 skulls were found in one temple, and it is estimated that at least 20,000 men, women, and children were sacrificed here each year. Even the Spaniards themselves, after the conquest, executed their own Castilian criminals here and exposed their heads, after the manner of the Aztecs, to the astonishment of visiting Indians.

Here Iturbide was proclaimed Emperor in 1822. Here the American general, Winfield Scott, raised the Stars and Stripes

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MEXICO REMEMBERS THE INDIAN HEROES WHO RESISTED THE CONQUISTADORS

The bronze statue of Cuauhtemoc (Guatemotzin), the last emperor of the Aztecs, stands in the Paseo de la Reforma. At the lower part of the superstructure are the names of Cuitlahuac, Cacama, Tetlepanquetzal, and Coanacoch, all heroic warriors who fought in the unequal struggle with the Spaniards. The tablet in the base represents the native ruler being tortured by order of Cortez.

Photograph by Fairchild Aërial Surveys

MEXICO HAS ONE OF THE WORLD'S MOST PERFECTLY APPOINTED PENITENTIARIES

Delinquents refer to this new and ultra-modern prison as *palacio blanco* (the white palace). It has accommodations for more than 1,000 prisoners and contains a hospital, a library, baths, and many other conveniences. The steel-lined, cement-floored cells are ranged along corridors converging at the center. There are separate departments for men and women.

in 1847, and here, twenty years later, the Emperor Maximilian bade sad farewell to his friends before he faced the firing squad. So on through the Diaz, Madero, Carranza, Obregón, Calles, and other régimes, this blood-stained area has seen Mexican history made. Palaces, pawnshops, churches, markets, and other institutions face it now, and into it run no fewer than ten thoroughfares, including the stately avenues of Cinco de Mayo, Madero, and the 16 de Septiembre.

On tramcars, on foot, and in motor cars an incredible traffic stream pours through this plaza every day, and on its west side there flourishes what is perhaps the city's oldest market. Since 1524, when city officials gave merchants permission to build porticoes to shelter goods displayed on the sidewalk in front of their stores, retail trade has gone on here. For years the public letter-writers plied their pens here, helping many lovesick Indians to "woo by mail." A few still do business (p. 56).

Walking about this plaza market now, you pass under arcades whose old walls are plastered with bullfight posters and notices of lottery drawings. Slow-moving Mexican street crowds loiter before the little shops. These sell toys, sweetmeats, newspapers, cheap jewelry, and odds and ends of hardware and dishes, eyeglasses, postcards, and other trivial wares, for the city's large department stores and finest shops are out on the fashionable avenues. Here, also, under these arcades, stuck away in tiny nooks, are men running little hand-printing presses for mak-

Photograph by Clifton Adams

HERE COUNTLESS LOVE LETTERS HAVE BEEN WRITTEN FOR ILLITERATE SWAINS

In the long, arched corridor near the Church of the Inquisition, professional scribes do a thriving business (see text, page 55). To-day most of them use typewriters, but formerly they plied quill pens. Legal papers and communications of every sort are turned out for small fees.

ing cheap calling cards and stationery, and other indolent artisans who mend clocks, guitars, tell fortunes with canary birds, and peddle lottery tickets. And here, too, is the beggar known in Mexican slang as the *pordiosero,* or, literally, the "for-God's-saker."

THE MARKET SPIRIT REMAINS UNCHANGED

On the south side of the plaza is a section known as the Portal de las Flores. This was the old flower market in days when canals still led to the plaza and Indians landed their canoes here.

Radio squawks into the sunny streets now and airplanes purr overhead. Luxurious motors roll by, carrying gold-laced diplomats to call at the President's office. But to peddlers, traders, and haggling shoppers the market spirit is unchanged since the Spaniards saw it first, so many centuries ago.

To Díaz and his men the number of people in the market place and the quantity of wares on display proved an amazing sight. As in European fairs, each kind of merchandise had its particular booth. In one section great numbers of Indian slaves, both men and women, were for sale. Some were tied to long poles with collars around their necks to prevent escape, while others, more tractable, were left free.

Here were dealers in gold, silver, precious stones, feathers, mantles, and embroidered goods of all kinds. In another booth were shown great pieces of cotton and cloth, various articles of twisted thread, and ropes and sandals. And the foods for sale here—chocolate, vegetables of many sorts, and herbs, as well as rabbits, deer, mallards, young dogs, and other such things! Fruiterers flourished; and many women were busy selling sweet cooked roots, dough, honey, tripe, nut paste, and salt.

There were innumerable skins, both dressed and undressed, in conspicuous places. Pumas, ocelots, otters, deer, badgers, and mountain cats—all had contributed their skins to swell the merchandise traded in by the Indians.

EACH PERILOUS PASS OF THE CAPE REQUIRES QUICK FOOTWORK

After the matador's preliminary skirmishes with the bull, a *banderillero* thrusts the barbed *banderillas* into the animal's shoulder, and the matador begins his final and most thrilling performance preparatory to the kill.

Photographs by Clifton Adams

MATADORS AND BANDERILLEROS WATCH THEIR FELLOW IN THE ARENA

Like substitutes on the sidelines at a football game, these gaily-clad performers press against the outer wall of the passageway between the stands and the ring, eagerly following every move of fighter and bull.

Photograph by International

THE ANCIENT CYPRESS RECKONS ITS AGE IN MILLENNIUMS

It is believed that between 5,000 and 6,000 years have passed since this great tree was a seedling. Many such venerable giants are found near Mexico City (see illustration, page 80).

And here Diaz found pottery of all descriptions, from huge water jugs to tiny jars. Many kinds of lumber were on display—beams, boards, blocks, and benches. Metal tools for various uses were observed, and gourds and gaily painted jars made of wood. And another curious thing: stone knives made by splitting them off the stone itself.

In fact, in this vast market place could be found almost as many articles as were then in use among the Indians, arranged in orderly fashion, and surprising both in variety and extent.

A GREAT SCENIC AMPHITHEATER FORMS THE VALLEY OF MEXICO

Mexico City rests in the bottom of what looks like the greatest volcanic crater in the world. Your first glimpse of the city, as you reach the rim of this amazing natural bowl, is that you are seeing it from an airplane. Gen. Winfield Scott wrote of his first sight of the city after his famous inland march from Vera Cruz in 1847:

"Descending the long western slope, a magnificent basin, with, near its center, the object of all our dreams and hopes, toils and dangers—once the gorgeous seat of the Montezumas, now the capital of a great Republic—first broke upon our enchanted view. The close surrounding lakes, sparkling under a bright sun, seemed in the distance pendent diamonds. The numerous steeples, of great beauty and elevation, with Popocatepetl, 10,000 feet higher, apparently near enough to touch with the hand, filled the mind with religious awe."

Sheer theatrical geography, that is the historic Valley of Mexico, or Anáhuac. A vast, mountain-fringed oval it is, of 1,758 square miles. It tops the Mexican highlands as a great natural colosseum, a dramatic, sun-drenched setting for all the stirring events it has staged.

Though in places more than 8,000 feet above the sea, flood waters long menaced its lower areas. Lakes and marshes were once more numerous than now. To protect ancient Tenochtitlán, the Aztecs built many dikes in salty Lake Texcoco. Three great causeways connected their Venice-like city of water streets with the main-

Photograph by Clifton Adams

HOLIDAY THRONGS CELEBRATE HOLY WEEK IN MEXICO

By day and night processions commemorate the successive parts of the Easter story. Effigies of Judas are burned on Good Friday and elaborate ceremonies are conducted in all the churches. This crowd in the Indian market in the Alameda is buying toys and fireworks.

land, and a waterway for canoes and barges ran out to Lake Texcoco.

Floods were so bad, even before the Spaniards came, that the Aztecs had built dams, and as early as 1553 the Viceroy Luis de Velasco struggled with the problem.

FLOOD HAZARD NOW CONTROLLED

One gigantic trench—the still famous Tajo de Nochistongo—was begun in 1607, in which task thousands of overworked Indians perished. It was first opened as a tunnel to drain the valley lakes; then, closed in a dispute, flood waters rose three feet deep in the city streets. Changed later from a tunnel into a great trench, in places 100 feet deep and 300 feet wide, the Tajo de Nochistongo remains an amazing example of what early Spaniards could do with Indian slave labor. From your train you can see this historic man-made mountain pass now, as you ride into Mexico City from the north

One of the strangest aspects of Mexico City is that, though perched so high up near a continental divide, it long diked and drained itself like a seaside town in Holland. It was not till 1900, after centuries of study and work, that the city was made safe, when the great 30-mile Canal del Desagüe was completed. On it thousands of men worked for years, with teams, trams, and steam shovels. It is easily the most spectacular modern engineering feat from the Roosevelt Dam to the Panama Canal.

To dig this ditch and carry its tunnel to more than six miles, under the Xalpan Mountains, nearly 11,000,000 cubic meters of earth and rock had to be moved.

With lock gates, waste water is now controlled and Lake Texcoco held at a safe level, so no more floods may swamp Mexico City; but underground the water is still at work. You need no plumb bob or spirit level, when you look at some heavy old buildings in the city, to see that they are leaning from the perpendicular; and some are sinking so badly as to threaten collapse. This slow subsiding of heavy structures is due to the swampy soil on which the city stands.

To-day, despite railways, motor-roads, country clubs, and modern suburban colonies of villas, bungalows, and a few country houses, mankind is grouped in the great valley as in the long ago. Where Toltecs, Chichimecs, and Aztecs in turn built their mud and stone towns, there you find towns now, with the people raising many of the same crops and drinking the same pulque.

The Federal District of Mexico, patterned somewhat after our District of Columbia, lies in the southwest part of the great valley. The names of many sections of this district reveal them as of pre-Columbian origin, such as Atzcapotzalco, Tacubaya, Tlalpam, Xochimilco, Coyoacán, and others.

"Popo," as Mexicans call Popocatepetl, is the great landmark of the Valley of Mexico. "Smoky Mountain," the name means in Aztec. Rising to 17,888 feet, in all Mexico Popo is exceeded in height only by Orizaba, in the State of Vera Cruz.

Since 1519, when Spanish records began, it has suffered ten notable eruptions. Unfathomed deposits of sulphur are stored in its great crater. More than 400 years ago the Spaniards began to mine sulphur here for making gunpowder. Since that time it is estimated that upward of 100,000,000 tons have been removed. Ice, too, is sometimes cut from its glacial caves for sale to towns on the plains.

Ixtaccihuatl, usually known as the "White" or "Sleeping Woman," from its odd configuration, is another snow-clad mountain, linked to Popo by a curving "saddle," over which Cortez led his little band to attack the Valley of Mexico. Seen on a clear day, it strangely resembles a recumbent female form.

MANY AMERICAN STUDENTS ATTEND MEXICO'S NATIONAL UNIVERSITY

Several hundred students, from all parts of the United States, arrive in Mexico City each summer to attend the National University.

Here, in the oldest university on the North American Continent, they study the literature and art, language, ancient civilizations, and political and social problems of the country. This contact with Spanish-speaking people is particularly helpful to American teachers of Spanish.

An atmosphere of antiquity is everywhere apparent. Imagine classes held in gorgeous palaces centuries old, in museums, in convents dating from the time of the Inquisition!

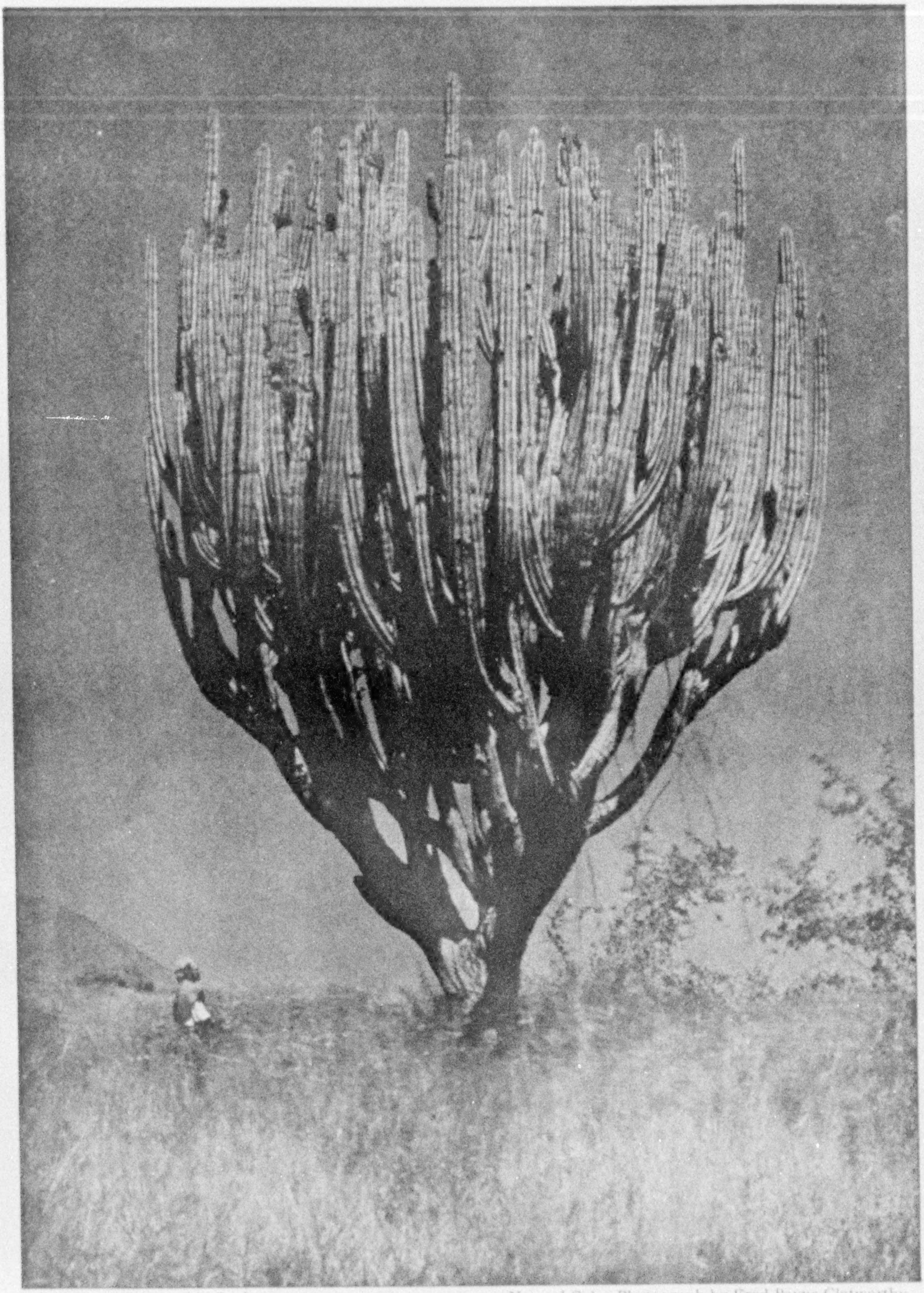
Known first as "The Royal and Pontifical University of Mexico," by 1775 this institution had awarded more than a thousand Doctor's degrees and nearly twenty-six thousand Bachelor's degrees. On this long roll of honor were many names later famous in professional, civil, and ecclesiastic annals of Mexico and Spain. About the middle of the nineteenth century, the old university was closed, but sixty years later the present National University of Mexico arose in its place and has since prospered to an amazing degree. Unlike the practice at seats of learning in the United States, few students here "work their way," for higher education in Mexico still has behind it a tradition of aristocracy.

To be admitted to the summer school, students must present credentials from a recognized institution, and courses completed here are accepted for credit in most colleges and universities of the United States.

Besides classwork, social diversions, and visits to historic points in the city proper, many excursions to near-by places are planned under university supervision. The monasteries of San Angel and Churubusco, with their quaint chapels and lovely gardens, are fascinating to sight-seers, and the trip to El Chico National Park is one of the most delightful in America. Pyramids comparable in interest to those of Egypt and the ruins of a once great city of a vanished race are to be found in the vicinity.

Mexico City is cool in summer, and thus ideal for visiting and study. The entire expense of attending the summer session is estimated not to exceed $450 for those from distant parts of the United States and about $300 when they come from near-by States.

Mexico City is also the seat of the Pan American Institute of Geography and History, an organization of broad scholastic nature. Its members, representatives from all the American countries, are scholars in geography and history. It forms contact with the various geographical and



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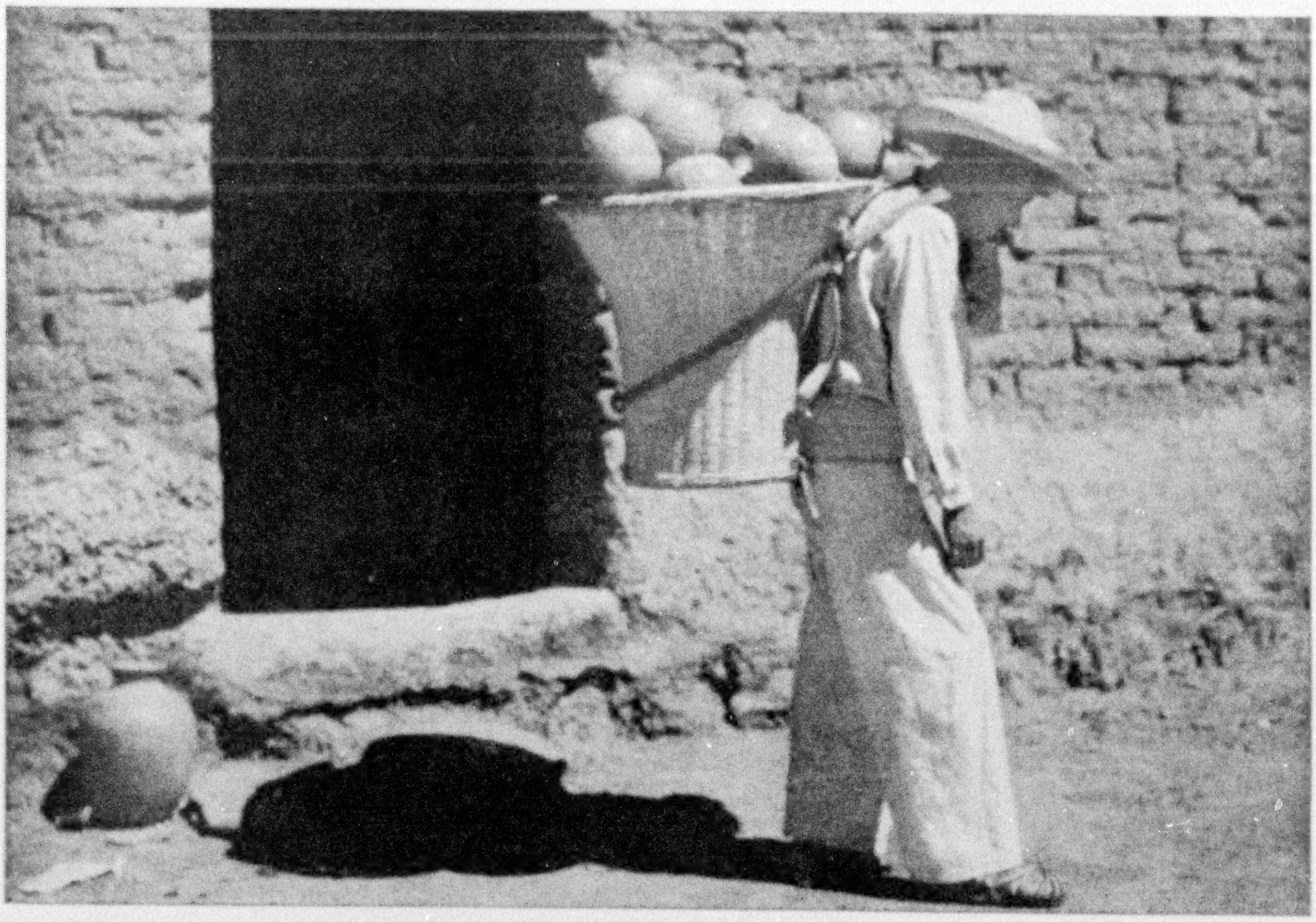
IN A LAND OF FANTASTIC CACTI

The massive candelabra cactus, with its thick, crowded, vertical branches rising from a short central trunk, is a prominent feature of the West coast landscape. It attains a height of 30 feet, or more. All cacti, one genus excepted, are native to the Western Hemisphere. Introduction of these curious forms of plant life into European gardens began soon after America was discovered.



THE PEON'S PACK REPRESENTS WEEKS OF LABOR

It may not be worth more than a few dollars, yet he is willing to walk miles and to spend days peddling his wares around the countryside until the whole stock is sold. The water bottle is a common article of barter at the markets.

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BRIGHT COLORS MARK POPULAR GRADES OF GUADALAJARA POTTERY

For a brush the decorator uses a few hairs pulled from a dog's tail and twisted around a stick. This pottery is soft-baked, easily breakable, and so porous that the bottles must be waterproofed inside before they can be used.

THE JARABE IS MEXICO'S NATIONAL DANCE

The sombrero forms a pivot for colorful evolutions, but the real test for the girl is to dance *inside* the brim without losing her balance. As a final gesture, she puts the hat on and strikes an attitude of challenge to her partner.

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SEÑORITAS EXEMPLIFY THE JARABE'S POETRY OF MOTION

This old country dance is usually performed by a man and a girl, or by couples, but only the girl proves her grace and agility by dancing inside the brim (see above). At dancing contests, prizes, such as serapes, are given to the most skillful performers.

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Natural-Color Photograph by Fred Payne Clatworthy

FROM COMPOSTELA, ONCE A NEW WORLD CAPITAL, CORONADO SET OUT FOR THE SEVEN CITIES OF CÍBOLA

"Cíbola is larger and finer than Mexico," reported Friar Marcos de Niza, who penetrated to the borders of the Zuñi pueblos in what is now western New Mexico. His story was the signal for a "rush" to join the exploring expedition of Coronado, volunteers being so eager that it was complained the country would be depopulated. Though the gold and precious stones of the Seven Cities proved a mirage, Coronado made one of the epochal explorations of all history.

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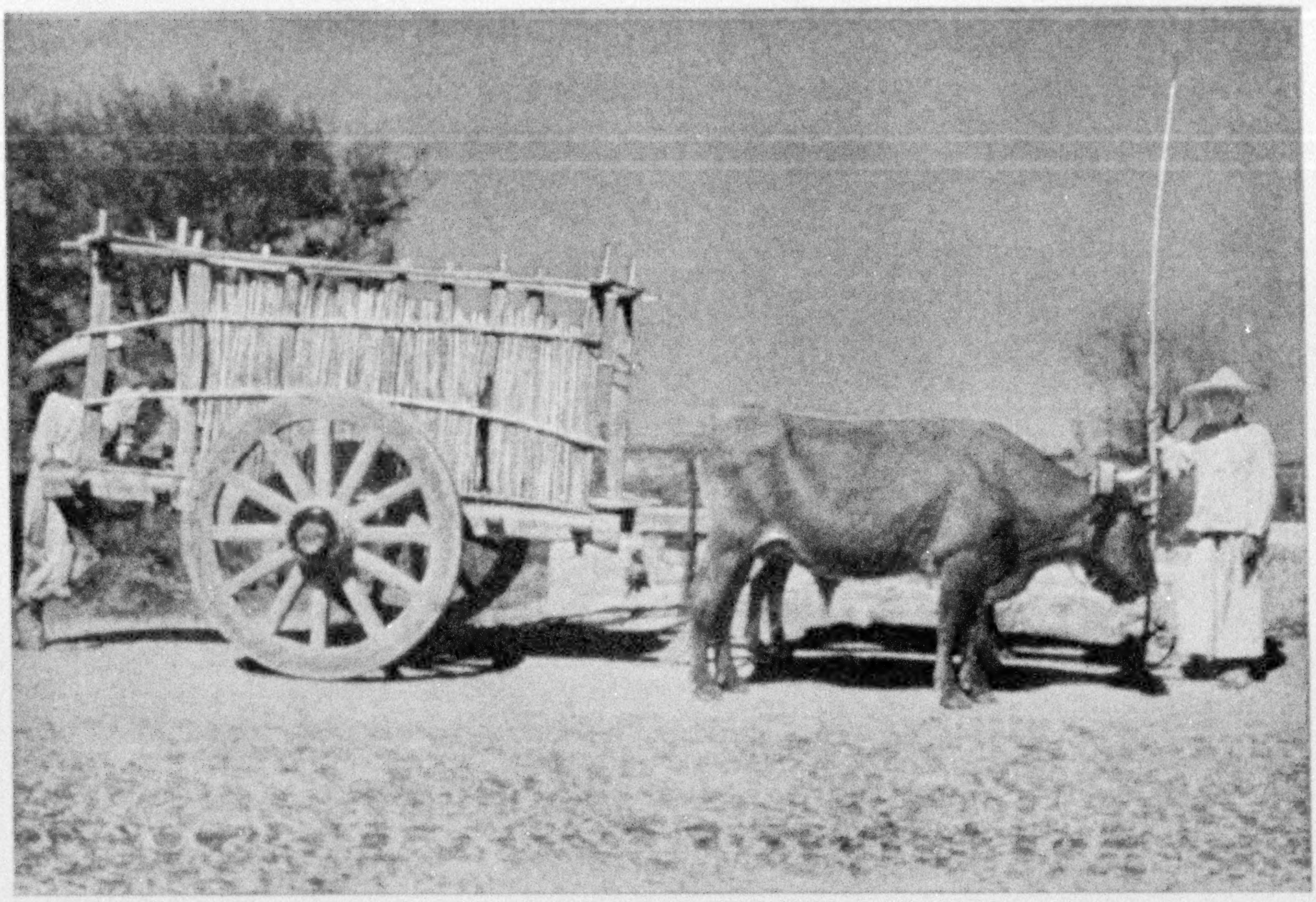
KINGS, EMPERORS, AND NOBLES, GAVE MEXICO MANY ARTISTIC TREASURES

The priest at the old church of Compostela (see also Color Plate IV) wears gold and silver vestments presented by Philip II of Spain. The exquisitely wrought Spanish sundial, at the right, has recorded the correct time of day for more than 300 years.



THE OXCART IS THE TRUCK OF THE BAD-ROAD REGIONS

These lumbering vehicles are used chiefly for hauling freight in out-of-the-way sections, and in particular cane on sugar plantations. The wheels, unless frequently greased, emit piercing shrieks.

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A BOATLOAD OF BLOOMS FROM MEXICO'S FLORAL VENICE

The floating gardens of Xochimilco no longer float as they did in Aztec times, but they still grow a profusion of roses, lilies, and pinks for the flower lovers of Mexico City, 15 miles away.

ONE OF GUADALAJARA'S TIME-STAINED CHURCHES

It is estimated that 20,800 religious structures were built in Mexico within a period of 300 years after the Spanish conquest. Many such chapels grace the Republic's second largest city.

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MAZATLÁN SALUTES BOTH BEAUTY AND COMMERCE

The señoritas of Mexico's chief Pacific port enjoy a charming view of the crescent bay along which runs a road from this abandoned fort at one end to a hilltop shrine at the other.

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HER FAMILY TREE IS ROOTED IN MEDIEVAL SPAIN

After the Spanish conquest, many aristocrats of the mother country chose Guadalajara as their home in the New World, and the pure strain has been carefully preserved. This accounts, in part, for the brown hair and delicate features possessed by some of the women of this wealthy city of culture.

historical institutions in the countries included in its membership, and works to promote their common interests by collecting and disseminating information helpful to explorers and scientists and maintaining a spirit of coöperation and mutual assistance in these fields.

Education is a bond between nations. The National University has already, by its summer sessions, done much to cement friendly and sympathetic feeling between the United States and Mexico. The Pan-American Institute of Geography and History carries on, in its unique way, this useful work.

A few miles south of the city lies Xochimilco, the famous "floating gardens." The name means "Where Flowers Grow." Your way out lies through the cactus-lined lanes and flower-garden plazas of Indian villages.

Xochimilco, popular picnic ground for the city, dates from pre-Aztec times.

The gardens actually floated in those days! On plaited rafts of sticks and vines dirt was spread and flowers were planted, so the garden could be poled about at will. Though no longer movable, the flower beds are still separated by narrow water lanes, through which the Indian paddles the pleasure-seekers or moves about to pick poppies, lilies, roses, marigolds, nasturtiums, sweet peas, and vegetables for sale in the city (see Color Plate VI and pages 74 and 76).

Flat-bottom boats, gay with awnings and decked with flowers, ply for hire among the ferns and lily pads of the water lanes. Floating gently along, sometimes in the shade of the graceful *ahuehuete* trees, you pass patches of tall corn or a picnic party on the bank, with jazz music playing, or a bacchanalian "café boat" serving *enchiladas*, fried beans, beer, and pulque.

From Xochimilco into Mexico City runs the ancient Viga Canal, long a channel of traffic for Indian boatmen hauling flowers, vegetables, and fowls to city markets.

Part of the city's water supply is pumped from a station here, known as Ojos de Agua. Here, by topiarian trimming, shrubs and pines have been fantastically formed to represent monkeys, animals, and boats, after the manner of Japanese gardeners' creations.

A rainbow riot of color Xochimilco is in early spring, and musical with myriad birds and frogs. In city escape, here, too, come the lovers. Romeo, reclining in the gently rocking barge, poled by a stolid Indian, who may see but yet is blind, strums his guitar and sings to dark-eyed Juliet. Four hundred years ago, without any doubt at all, the gallants of Spain were singing the same sentiments to not unwilling Aztec maids, right here in Xochimilco. So began the Mexican race.

HERE STANDS THE LARGEST CHURCH EDIFICE IN THE REPUBLIC

Facing the capital's large plaza on the north rises the thick-walled, buttressed old cathedral or Holy Metropolitan Church of Mexico, proudly known as the "Mexican St. Peter's."

There are other churches here which may be more beautiful, to modern builders, than this colossal blend of many architectural forms; but for sheer historical significance this cathedral transcends any other structure of its kind in North America (see page 46).

It may show the sad mutilations of time and turpitude; some of its once fabulous wealth of ornaments may be marred or missing; but in its lordly grandeur and the medieval opulence of its decorative features, with its gargoyles, cornices, friezes, mosaics, statues, chapels, and paintings, it stands a splendid monument to the glorious age of the Spanish viceroys.

Conspicuous in the modern city skyline, the bell-shaped domes of the cathedral's twin towers, topped by crosses, rise more than 200 feet above the street. For years a family of bell-ringers, or *campaneros*, lived up in one of these towers—an airy home with a striking view of the city! One of the great bells suspended here is sixteen and a half feet high and weighs about 27,000 pounds. Its 500-pound clapper is eight feet long, and when this bell is rung on a calm day you can hear it five or six miles away.

As with many other old buildings in Mexico City, there is evidence that the great cathedral is slowly sinking, and a strange belief is current among the ignorant and credulous. They say the foundations of this huge edifice are swung on giant chains, so that when earthquakes come they cannot shake it down!

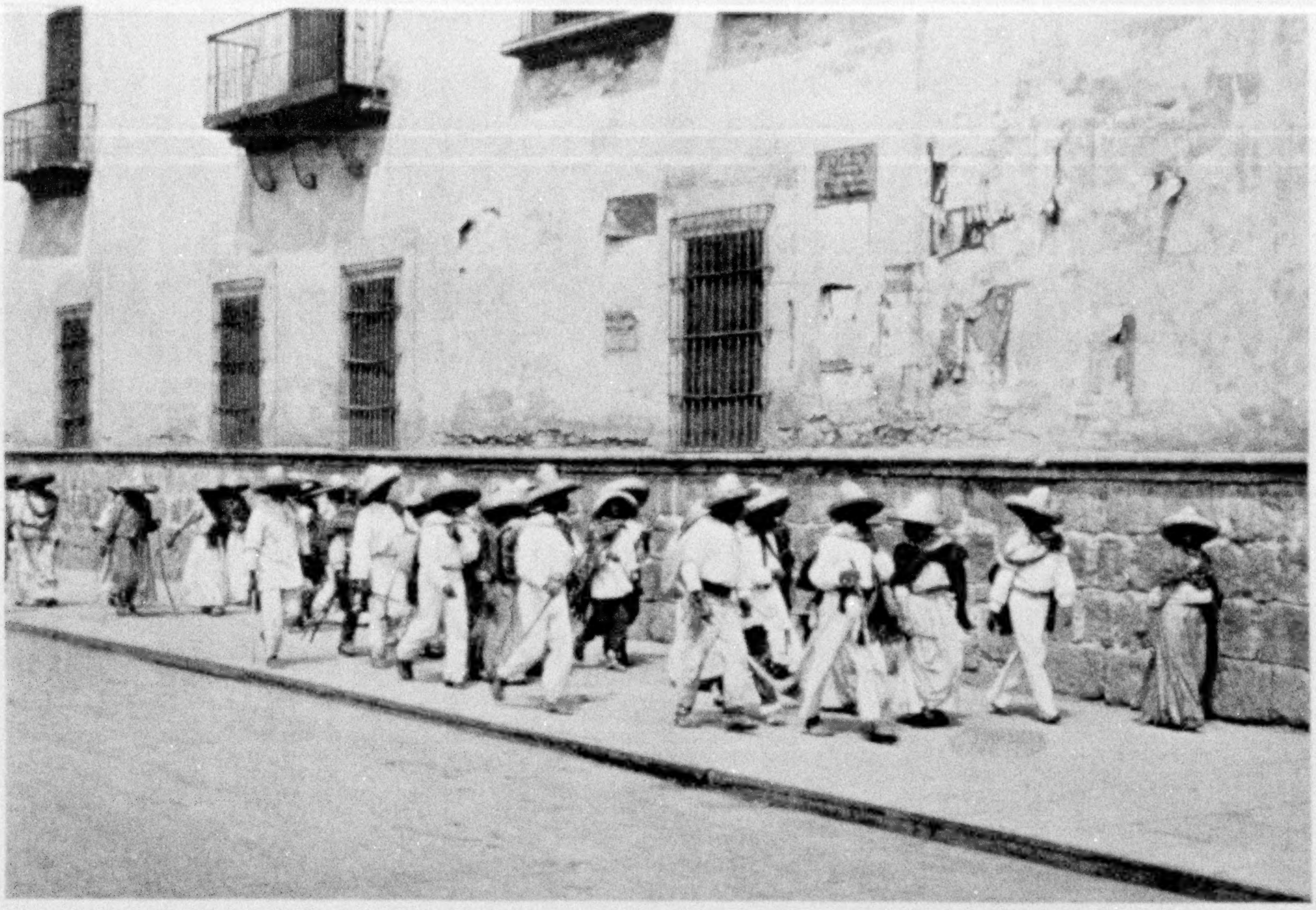
INDIANS SELL ALL KINDS OF TOYS ON THE CURBS

With such fascinating wares displayed along the sidewalks, any youngster may easily be forgiven for loitering a bit on the way home with his market basket.

Photographs by Clifton Adams

THE NATIONAL LOTTERY IS A FAMOUS MEXICAN INSTITUTION

It is held every week for prizes of varying amounts, and ticket-sellers are found on all the streets. These are awaiting customers in front of headquarters.



INDIANS FROM THE COUNTRY FLOCK INTO MEXICO CITY

Where their ancestors lived in regal splendor, these people have became peons, toiling in the fields and making pulque to eke out a livelihood.

Photographs by Clifton Adams

STREET SCENES BRIDGE THE GAP OF CENTURIES

In its modern aspect Mexico City resembles Denver (see text, page 45), but it retains numerous customs that date from the time of the conquistadors.

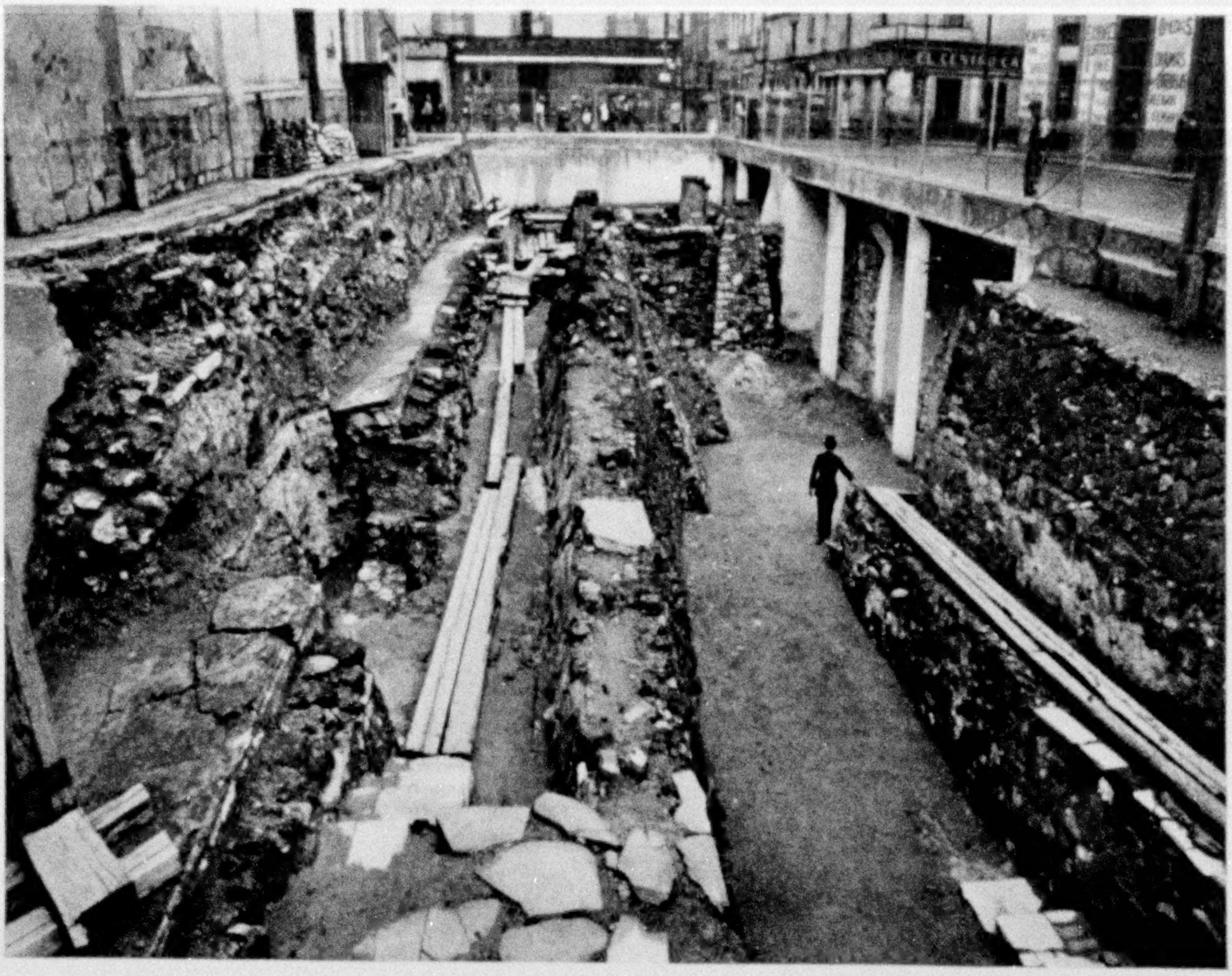
MONTEZUMA'S PEOPLE TOLD TIME BY THIS DEVICE

The Calendar Stone, or Stone of the Sun, originally a part of the walls of the ancient temple of Tenochtitlán, was found in the Plaza Mayor (see text, page 53) in the seventeenth century. Astronomical and chronological signs carved in geometrical order on its face indicate that it was used by the Aztecs as a sundial and calendar. After being exposed for more than a century on the base of the west tower of the cathedral, it was removed to the National Museum.

Photographs by Clifton Adams

"CASEY AT THE BAT" WAS A NOTABLE FIGURE LONG BEFORE CORTEZ

A sort of ball game popular among the Tarascos of Michoacán, who made these images, may explain the anachronistic appearance of the "home-run king" in the center.



Photograph by Clifton Adams

RELICS OF A FORGOTTEN PEOPLE UNDERLIE MODERN STREETS

In excavations for the foundations of a business block on a corner near the cathedral, workmen uncovered seven floor levels of the ancient Aztec temple (see text, page 48) and the sides of two pyramids decorated with carved serpent heads. The Mexican Government is preserving the find for study.

The first Christian church in North America, completed in 1525, was built here by the Spaniards, near the great Aztec teocalli (see text, page 48). Stones from this reeking pagan sanctuary were used as building material in that Christian church.

Some decades later the present cathedral was begun near the original church, and its foundations were built largely of cut stone and sculptured images from the Aztec temple. In fact, the famous sacrificial stone (see page 79), now in the National Museum, was found buried near the cathedral atrium in 1791. Near here, too, in the seventeenth century, was unearthed the great Aztec stone calendar.

Thus, in this one small spot, away off here in highland Mexico, we find existing relics of a vanished pagan religion, as well as one of the first great Christian temples built in North America.

Three important trunk-line railways enter Mexico from the United States, and reach the capital, from the border cities of Laredo, El Paso, and Nogales. When railways were first built, some decades ago, Americans began entering Mexico in large numbers, to engage in mining, construction work, ranching, banking, commerce, and, later, in oil development. By 1911 the American population of Mexico City, including floaters, was between 12,000 and 15,000.

Not so many reside there permanently now, because of changing conditions, but the number still runs into the thousands, and this Yankee colony forms an important group in the social and business life of the capital.

But, what with something like 130 holidays a year, including Sundays, and the Mexican habit of taking a midday siesta

Photograph by International

THE LILY VENDER BEARS A LOAD OF LOVELINESS

From floating gardens burgeoning with bloom (see text, page 69, and illustration, page 76) treasures of exquisite flowers are brought for sale in the streets. Even the poorest may have his bouquet at trifling cost.

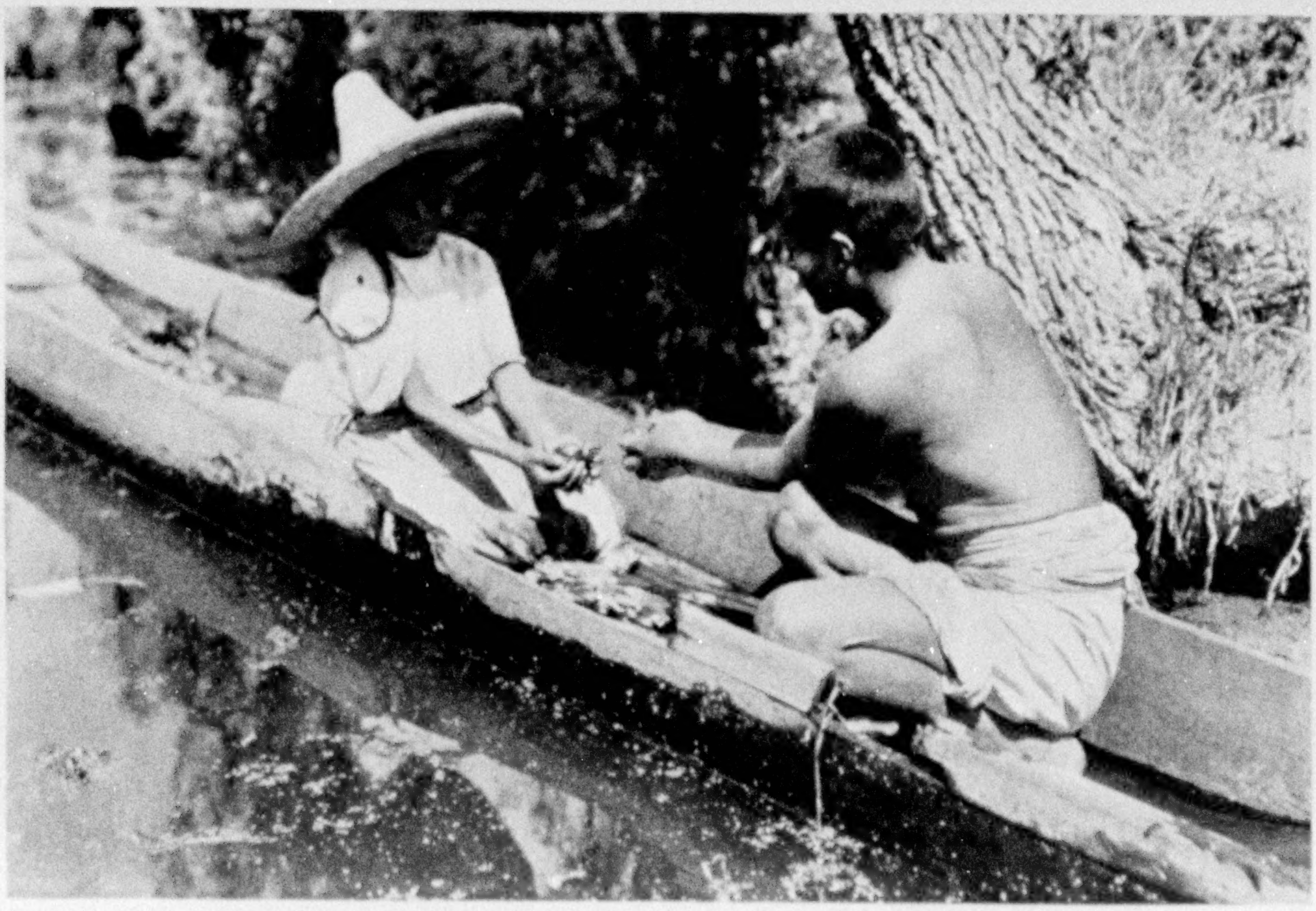
between 1 o'clock and 3:30 in the afternoon, life is hardly so strenuous as in American cities of similar size.

"Because some items of household expense, like servants, fruits, vegetables, laundry, and taxi hire, are less here than in the States," said one American lady who resides in Mexico City, "you might think that living here is cheap. But it isn't. Rents are high and freight customs duties on so many necessities which we still import bring expenses up. . . . Of course, if one wished to abstain from social life, which is most active here, he could probably live for less than the same standard might cost in an American city; but, since theater and concert attractions are few, we find needed diversion in social activity."

"When we moved down here from Denver," said one fair transplanted resident, "I was terribly excited the first week because I kept getting telegrams. Every time the boy came with one I was alarmed lest it be bad news from Denver; but I soon got over that. You see, society people here use the telegraph service to issue and accept invitations. . . . And social life is highly organized. People are so punctilious about social forms and observances that to a newcomer it seems the city must live under some old-fashioned rule book of etiquette. Teas, dinners, dances, card parties, receptions, lunches, week-ends at Cuernavaca, tennis, polo, golf—they fill the leisure hours of the American woman, and most of us are well satisfied with life in Mexico City.

"The chief evening diversion is the movies; but lately the advent of 'talkies,' which so far have used only the English language, has created a difficult problem here. Naturally, the producers can obtain only English talkies; and, while the Mexicans would probably rather see and hear these than nothing, their national pride

NATIVES AT XOCHIMILCO CATCH MUSSELS WITH THEIR HANDS



Photographs by Clifton Adams

PATIENCE AND SKILL ARE REWARDED BY A CATCH OF SMALL MUSSELS

For centuries these waters have yielded their spoils to just such primitive fishermen lying in shallow dugouts or canoes.

© Elmendorf from Galloway

VIGO CANAL WINDS AMONG FLOATING GARDENS

On these islands, now stationary, but originally made by putting soil on large rafts of sticks (see text, page 69), most of the vegetables and almost incredible quantities of flowers are raised for Mexico City markets. The trees, a kind of poplar, are peculiar to the place. In flat-bottomed boats propelled by poles, the Indian gardeners are as much at home as they are on land.

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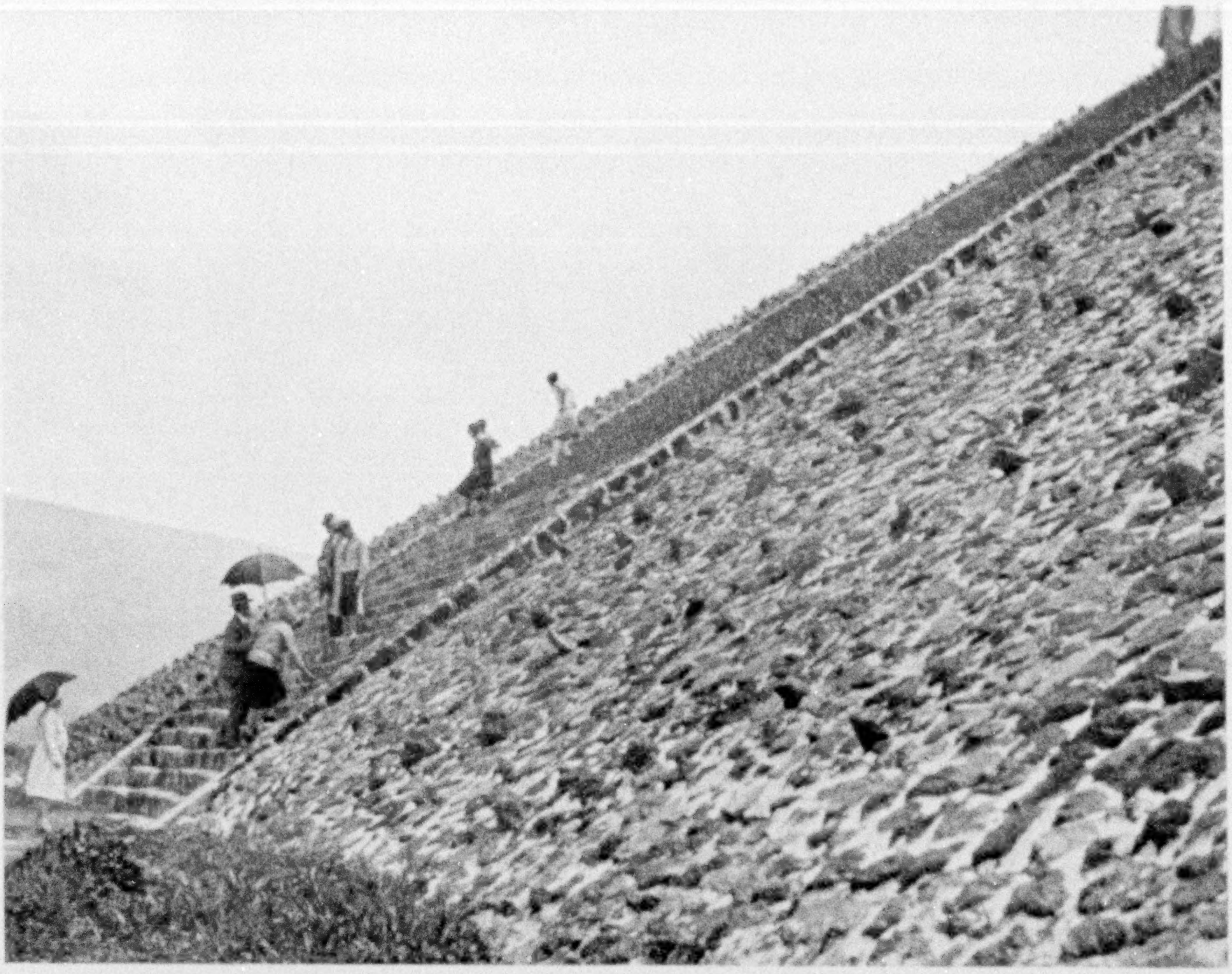
ORGAN CACTUS FENCES THE OPEN-AIR THEATER AT SAN JUAN TEOTIHUACÁN

Here Nature provides an admirable bar to would-be trespassers. The Pyramid of the Sun (see text, page 81, and illustration, page 78) looms in the distance. In the foreground a native is about to drain a large maguey for pulque. By means of a long gourd perforated at the ends, he sucks the sap from the heart of the plant. The juice is caught in the tube and is then poured into a pigskin container for fermentation.



Photograph by L. F. Hurlong

CLIMBERS OF THE PYRAMID OF THE SUN CAN IMAGINE ITS BUILDERS' TOIL

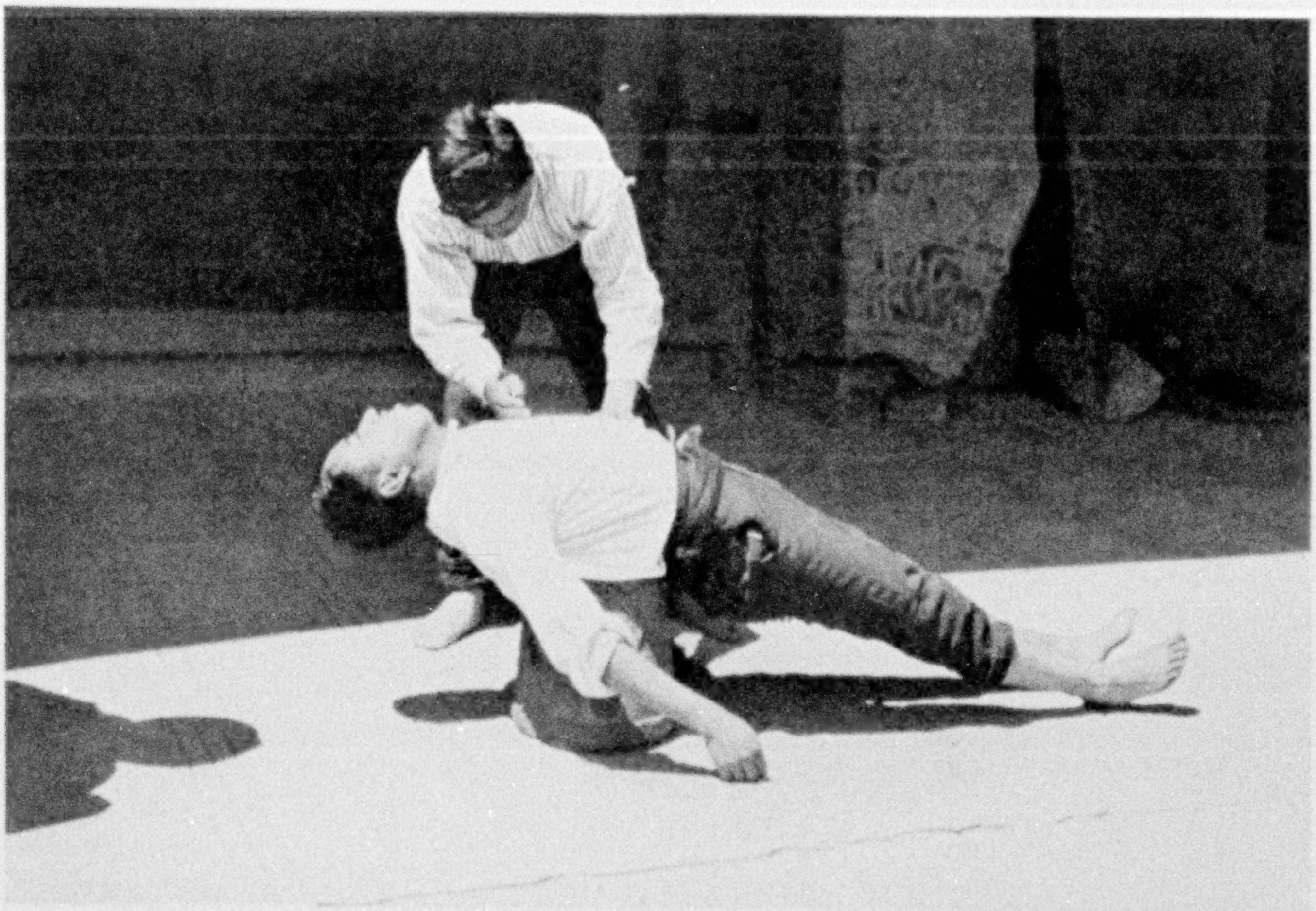
This astonishing work of a forgotten people (see text, page 81) is 216 feet high and rises in five narrowing terraces of earth and volcanic rock, originally faced with cement-plastered masonry. From the mound and its sister, the Pyramid of the Moon, have been taken wrought-stone sarcophagi containing human bones, obsidian knives, and terra-cotta heads supposed to be effigies of buried priests. No two of the hundreds of masks unearthed are alike; some appear markedly Egyptian in character, others mongoloid, and not a few negroid.

impels them to demand Spanish talkies, and this has induced a situation bordering on the controversial."

NIGHT LIFE IS NOT CONSPICUOUS

Compared with any great American city, however, one finds here practically no night life in cafés, cabarets, and show-places. By 9:30 p. m., except for patrons returning from moving-picture houses, the streets are almost deserted. Climate causes this. Because of high altitude, nights are often exceptionally cool. Dinner is usually served in the early afternoon and a light repast at night.

Late in the afternoon you see the city's busy shopping streets at their best. Crowds throng the famous avenues; taxis, busses, and private motor cars crowd the streets, where traffic is handled by policemen in white gloves. An odd cosmopolitanism marks the larger stores of Mexico City. In German stores you may see American-made machines, typewriters, tools, hardware, ice boxes, and furniture. Fancy American groceries and preserved meats are sold by Spanish merchants. Women's wear, soaps, perfumery, jewelry, silks, millinery, and other department-store goods are retailed often by the French, and in nearly all large stores English is spoken. In the past it was obvious that fashionably dressed Mexican women preferred hats, clothing, and shoes imported from Paris. Now, to a growing degree, American styles, especially in sport and street clothes, are closely followed. This is an influence, no doubt, of the moving-picture shows and increasing travel between the United States and Mexico.



Photograph by Clifton Adams

THUS, WITH OBSIDIAN KNIVES, AZTEC PRIESTS CUT OUT THEIR VICTIMS' HEARTS

Attendants of the National Museum in Mexico City are demonstrating here, on an original sacrificial stone, a grim ceremony that was often enacted in Montezuma's day. The teocalli, scene of many such weird and gruesome rites, stood in the modern Plaza de la Constitución. Bernal Diaz del Castillo, follower of Cortez and chronicler of the conquistadors, left a vivid description of the chambers of horror found in the temples (see text, page 48).

American style and influence are reflected again, not only in dress, but in the occupation of Mexican women. There is more social and industrial freedom. Now a growing number of Mexican girls are employed as stenographers, bookkeepers, clerks, and telephone operators, and have well proved their fitness for a place in the new world of Mexican economics.

Since the passing of the Diaz régime, changes have come fast. You see such change not only in new buildings, but in better communications, more people who speak English, more skilled workers, and a high standard of living

SELF-EDUCATION MAKING GREAT PROGRESS

The popular thirst for knowledge is *bona fide* and deep-rooted. Free libraries multiply and all classes and ages frequent them. In the library of the Department of Education is a room for children, with a famous artist's panels depicting a charming version of Little Red Riding Hood. Out in Chapultepec Park, amid giant ahuehuete trees that were there in Aztec days, stands the fascinating Quixote Fountain. Tiled seats run around it and a statue of Don Quixote faces one of old Sancho Panza on his mule. Fitted into the base of the statues are bookshelves, with copies of Cervantes's tales and the works of Plato, Plutarch, Homer, Stendhal, and Goethe. Here flock the young and old men, who wish to be quiet and read the classics. Around the basin of the fountain runs a sentence, the first line of Cervantes's immortal romance: "At a place in La Mancha whose name I do not care to recall" (see page 51).

This forest of Chapultepec, inherited from the Aztecs, remains one of America's beauty spots. Its giant cypresses, known as ahuehuetes (*Taxodium distichum*) were old when Cortez was a baby. It surrounds a hill on which stands the Castle of Chapultepec, a Presidential palace. Here, in the old days, Montezuma had a

© Elmendorf from Galloway

A LIVING WITNESS OF THE HORRORS OF THE SPANISH CONQUEST IS THE "TREE OF THE SAD NIGHT"

Under this giant cypress at Popotla, near Mexico City, Hernando Cortez is said to have sat and wept at the sight of his depleted army straggling past after the disastrous retreat from Tenochtitlán July 2, 1520.

summer palace. The name in Aztec means Grasshopper Hill. When Maximilian and Carlota came they remodeled the old viceroy palace into a Tuscan style of almost Pompeian voluptuousness. Here I saw that famous painting showing Cortez torturing the last Aztec Emperor.

Tourists, especially in the cold winter months, throng the city in ever-increasing groups. Many come now by airplane, for regularly established lines tie the Mexican capital to various American cities. Between Mexico City and the Pacific coast port of Acapulco a motor highway has been opened, following in general the ancient military road used when Spanish galleons from Manila discharged cargo at Acapulco for shipment to Spain via Mexico City and Vera Cruz.

MEXICO CITY AS AN ART CENTER

Out to historic Cuernavaca, where the American Ambassador and others have country places, a scenic motor highway now leads, and likewise to Puebla, ancient and prosperous city. From the American border, motor highways, like the one to Monterrey, are beginning to penetrate, and it is only a question of time until touring motor parties from the United States will be a common sight on the streets of Mexico City. It is a curious fact that nearly a century ago one visitor predicted that some day a public stagecoach line would ply from Philadelphia and Washington to the old Aztec capital!

The art of the Indian and the modern Mexican intrigues every tourist. Whether one is lured by Aztec art in the museum, by native serapes or ceramics, by the many fine old paintings in the churches and galleries, or sometimes by the more futuristic murals and canvases of the moderns, Mexico City is, beyond question, the conspicuous seat of Spanish-American artistic culture in North America.

The brush-and-pen achievements of mere school children and their plastic work in clay is inevitably a source of astonishment to foreign visitors.

Even in early colonial days, a few Indian painters, trained by the padres, painted pictures which attracted much attention in Europe; and to-day an increasing number of artists come to Mexico, not only to study the work of the ancients, but to mingle with modern native artists and to work in the atmosphere of the old Aztec capital.

Prominent among these moderns is Diego Rivera, the famous painter of murals. His work is so outstanding that artists have come from Europe, South America, and the United States to study it. He employs his art in social education and paints to instruct the common people rather than to earn money.

"Civilization is harmony between mankind and the soil and harmony among men," says a big red banner over an arch in the new building of the Ministry of Education. Here Rivera's symbolic panels reflect the lush, sensuous nature of life in turbulent, changing Mexico, with all its problems of labor and society. One mural portrays the popular corn fiesta of the Indians and peons; another hints at the building of temples. Others show dyers, cane-cutters, tobacco farmers, potters, weavers, and miners at their work—democracy massed and in motion. One fresco of a May Day celebration, with its dancers and marching singers, is of strange power and appeal.

Not only is the city the cultural center of the Nation, but it is also the center of the publishing and book trades. Practically all newsprint and book paper used is made locally. Most Mexican writers—barring a few of the older men of letters who cling to the provincial capitals—reside here, and each year there is issued from local presses about 200 new titles, often reaching more than 2,000,000 volumes. Besides these, the numerous bookstores, large and small, sell a steady stream of books printed in Spain and France. The works of Spanish writers appear more popular than those of Mexican writers. About 4,000,000 books printed in Spain are sold in Mexico each year and perhaps 500,000 from France.

Each of the great Mexico City dailies, *Universal* and *Excelsior*, prints a bulky Sunday edition, patterned after American metropolitan Sunday papers, with illustrations and features, even including some of our well-known "comic strips" and cartoons, with texts rendered in Spanish.

AMAZING MONUMENTS LINK MODERN MEXICO WITH ANCIENT TIMES

To art students, and particularly to sculptors, the graven images on the mysterious old ruined temples in the Valley of Mexico are of profound interest.

Some of the most colossal structures built by prehistoric men anywhere in the Western Hemisphere are found in Mexico. Mitla, Uxmal, Palenque, Chichen Itzá, the incomparable pyramid of Cholula, its base greater than that of Cheops—all these are monuments left by forgotten civilizations.*

Skirt Lake Texcoco, on a fine motorway extending from Mexico City, and you soon reach San Juan Teotihuacán. Here, before even the Aztecs came, some mysterious race appeared, building its temples and pyramids with a symbolic art strangely like that of ancient Egypt. Here is the Pyramid of the Sun. On its summit, according to tradition, once stood a giant stone figure, which bore on its breast a great plate of burnished gold, fixed there in such a position that it reflected the rays of sunrise. A few furlongs from here, on a strange road called the Path of the Dead, stands the Pyramid of the Moon. About the moon temple are many ruins of other structures adorned with oddly evil serpent faces carved from stone.†

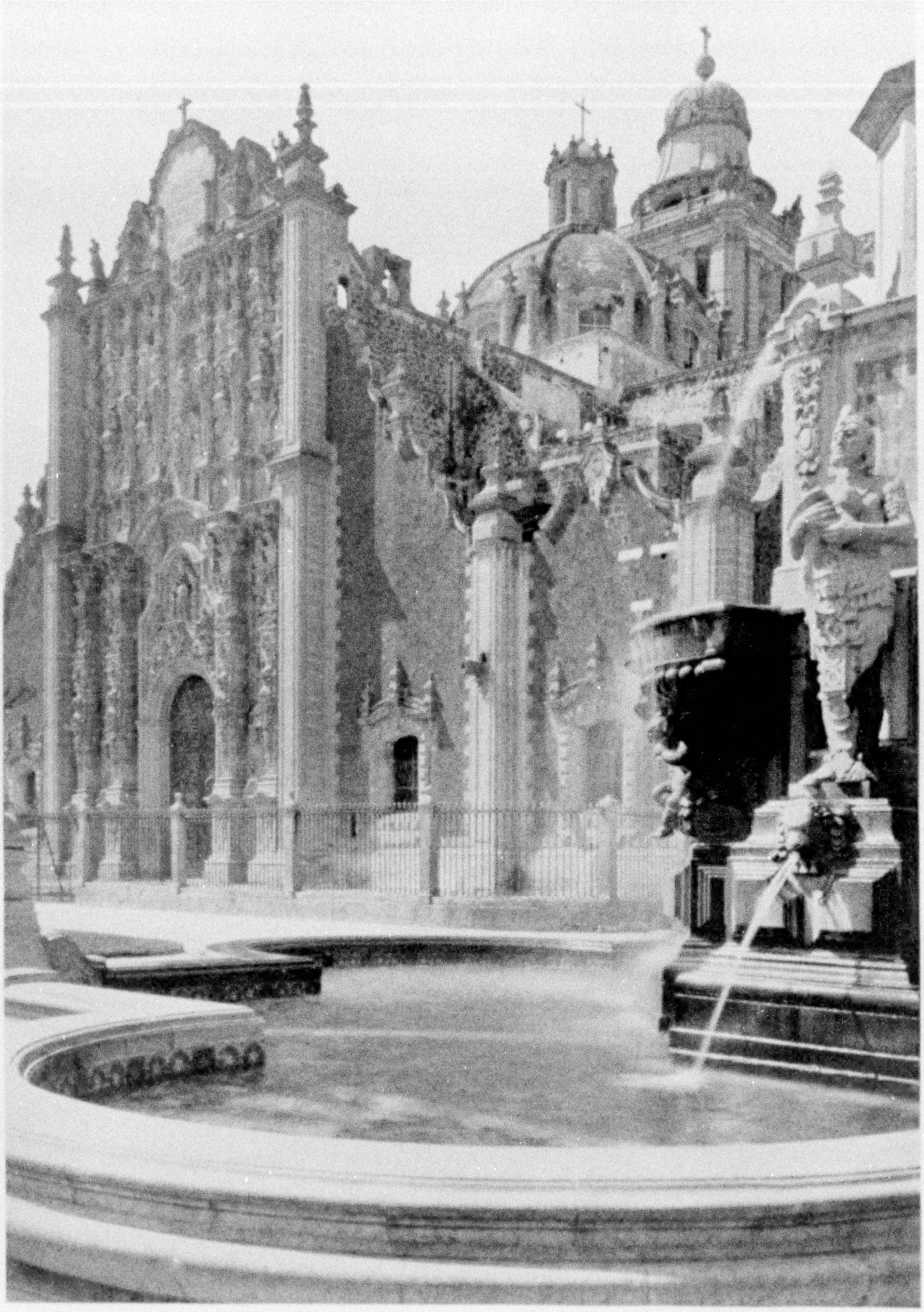
A tattered old Indian came shuffling up to sell me a tiny terra-cotta mask. It showed a flat, slant-eyed oriental face. It may have been a sample of the "photography" of an ancient race before the days of cameras.

"Who made it?" I asked. *"La Gente Olvidada"* (The Forgotten People).

I looked at him and then at the infinite stretches of terraces, quadrangles,

* See, also, in the NATIONAL GEOGRAPHIC MAGAZINE, "Chichen Itzá, an Ancient American Mecca," January, 1925, and "The Foremost Intellectual Achievements of Ancient America," February, 1922, by Sylvanus Griswold Morley; and "Hewers of Stone," by Jeremiah Zimmerman, December, 1910.

† See, also, "An Interesting Visit to the Ancient Pyramids of San Juan Teotihuacán," by A. C. Galloway, in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1910.



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SAGRARIO METROPOLITANO DATES FROM THE MIDDLE OF THE 18TH CENTURY

Though joined to the cathedral (see illustration, page 46), the magnificent edifice the east entrance of which is seen here is a separate church in itself. The fountain at the right commemorates Fray Bartolomé de las Casas, the famous and revered "Apostle of the Indians."

and mathematically perfect courts of the ruined city.

Who built these marvelous works, now so still, unreal, and empty? Certainly no native race in the last half dozen centuries has produced any architecture to compare with these ruins.

In fancy, as you stand out there, alone on top of one of these ancient pyramids, with the silence of the dead city all about, it is easy to imagine the vanished people back again. What a busy scene the mind can conjure up! Foremen shouting, cracking whips at the slaves, the rattle of obsidian tools, and trumpet blasts, as this pagan city took shape in the long ago; and what a talking picture could have been made of one of the feast days, with all the wild music, the strange confusion of tongues, and striking costumes and dances!

On one fine, still day in June I sat for hours atop the Temple of the Sun, absorbed and lost in trying to imagine what kind of people these were, where they came from, how they lived and loved and fought, and what became of them. Of course, everybody else would like to solve the same riddles.

The ride back to town is short, but memories of the dead city and its mystery are persistent. The chances are you are still day-dreaming of it as you plunge again into the busy, crowded capital; and you feel again, as always below the Rio Grande, the sharp conflict between the very old and man's last word in new things.

Cortez studied the roomful of account books he seized from Montezuma and learned from whence came the city's gold, silver, pearls, cotton, grain, and supplies. To such centers as Jalisco, Oaxaca, Michoacán, and other districts he sent his captains to found posts. To-day trade still flows through these same channels.

So in the capital is focused the nation's commercial life and, to an increasing degree, its industrial life. Besides trade in wares and things produced locally, much American-made machinery, farm implements, motor cars, trucks, lumber, drugs, and foodstuffs are imported. Although exports of ores, oil, hides, lumber, and vegetables from Mexico to the United States run into many, many millions of dollars, practically nothing is shipped from Mexico City to the United States.

Persistent as Indian conservatism has been and deep as is the native Mexican love for handicraft, you see it yielding now to the machine age. Cigarette factories here are marvels of modern speed, efficiency, and mass production. Tourists visiting one famous factory, which employs hundreds of men and girls and has its own private chapel, medical department, school, post and telegraph offices, as well as a complete lithographing plant for its advertising work, are fascinated at the velocity of the great machines, which make nearly 16,000,000 cigarettes a day. It has often been said that these almost human machines can make the cigarettes, sort them, pack them, and do everything but smoke them.

It is the mushroom growth of small shops, fostered by electric power and the new import tariff laws, which is most significant. In recent years an amazing number of necessities, formerly imported, have come to be made here. From a veritable host of tanneries comes leather of good quality, which is skillfully worked into trunks, harness, saddles, belts, boots and shoes, and handbags. Candy and cakes and soft drinks are important manufactures, and the output of ready-made clothing from cotton, wool, and linen has grown hugely in recent times. Railroad shops, iron and steel mills, as well as smelting and refining works, now give employment to thousands; and a new industry, airplane construction, is growing up.

On billboards, in street cars, in newspapers, and on theater curtains the well-known illustrations for American-made toothpaste, typewriters, motor cars, and toilet soaps give gaudy welcome to visiting Yankees, and bring that sense of security which comes from contact with familiar things in far places.

MONTE DE PIEDAD A BOON TO THE POOR

"We went to the 'Thieves' Market' with an American dentist who lives here. He bought back his own doormat and radiator cap!" declares a tourist from Iowa. "There's the most microbic lot of junk there I ever saw. Whenever anything is stolen from you here they say, 'You go to the Thieves' Market and look for it'."

Photograph by Clifton Adams

INDEPENDENCE MONUMENT EXPRESSES THE SPIRIT OF THE REPUBLIC

In the Paseo de la Reforma stands this magnificent memorial. The four seated bronze figures of the socle are Peace, Law, Justice, and War. The marble group just above them represents the apotheosis of Independence. Surmounting the shaft, winged Victory greets the day of freedom with a laurel wreath in the right hand; in the left a broken chain, emblematic of the bondage which held the beloved country for three centuries.

"But the Monte de Piedad is more heterogeneous," observes the teacher of history. "It has regular auctions and you get better bargains. It resembles the Monte di Pietà of Italy, set up in Rome in the time of Leo X to save the poor from usurious lenders (see page 49).

"This busy official pawnshop was founded as a form of public charity by a Mexican muleteer who grew rich from a silver mine. On pledged articles it will loan any amount from a few cents to several thousand dollars. It is a public convenience; people of all classes enjoy its aid, with no loss of caste or self-respect. It works like a bank, except that the collateral on loans may be anything from a blanket or a sewing machine to field glasses, pianos, or an eight-cylinder car."

"Yes, that's interesting," insists the man from Chicago. "But it's the age of this place, and all that's happened here, that makes me stop and think. I wish I could have marched in with Cortez. The Aztecs gave him a solid gold dish as big as a wagon wheel, all set with precious stones. The more you study this place, the more you marvel."

Mexico City *is* astonishing. Bustling, modern capital of a great Republic, its span of life still links our civilization with a culture of long ago. Well may the tourist exclaim and the student remain to ponder!

TO-DAY ON "THE YUKON TRAIL OF 1898"

By Amos Burg

IN THE golden Klondike days the lonely 2,300 miles from Lake Bennett to Bering Sea became almost overnight the highway of adventurers from all nations. Now, thirty years later, inspiration armed me with a movie camera instead of a pick and sent me north to see for myself that famous old "Trail of 1898."

A former shipmate, Fred Hill, enlisted as my companion. With a contract to film the annual migration of caribou across the Yukon, we dusted off our canoe, *Song o' the Winds,* and shipped it with us from Seattle. The canoe, 18 feet long, spruce-ribbed, canvas-covered, and decked over on the bow, had already navigated the Snake and Columbia rivers.

We launched our craft at Juneau in June and paddled north between snowy peaks of the Alexander Archipelago to Skagway. This sleepy town, resting in a low valley between glacier-edged mountains, hardly betrays the fact that once it was the popular jumping-off place to one of the most extravagant and sensational of human adventures. Years ago the reckless, determined, gold-crazed Argonauts gave way to wide-eyed tourists, who look now for gold in sunsets and for walrus ivory carvings in the stores.

Far from being adventurers ourselves, we soon found we hadn't even sprouted pin feathers. Our new boots raised blisters as we ascended Chilkoot Pass from deserted Dyea, and the mosquitoes buzzed, "They shall not pass." We soon voted to abandon that route! Yet some of the ninety-eighters, we are told, brought bicycles along with them to pedal their way to the Klondike!

TWO TENDERFEET HIT THE ARGONAUTS' TRAIL OF '98

So in comfort we conquered the White Pass in a coach behind a puffy little engine that zigzagged to the summit of this coastal mountain barrier, where the Rockies slope into Canadian territory. Sea ozone was left behind, as we rattled down the eastern watershed. Here, beginning scarcely 15 miles from the Pacific, the first dribbling waters feeding the Yukon lakes are destined to travel 2,300 miles to reach Bering Sea. Thanks to the same lure that itched the feet of Ulysses and Magellan, we were to travel with these waters (see map, page 89).

While tourists besieged the lunch counter at Bennett, we carried our canoe from the flat car behind the cinder-spitting locomotive and launched it on Lake Bennett. Our cameras were set in iron racks on either side of the bow, while our clothes and provisions were packed in waterproof bags. One of these bags was marked "Miscellaneous—if you can't find it, look in here."

Thus prepared, we mentally laid our first course: a thousand twisting miles to the northwest, above the Arctic Circle, to where, on the apex of the great Arctic bend at Fort Yukon, the river turns on a southwesterly trek for more than a thousand miles more to drop the sediment of its burdened waters upon a creeping delta. Adventurers? We were *cheechakos,* limping in our new boots! Thirty thousand Argonauts had hit this trail before us, and we merely followed in their wake, reading in a vague way their romantic saga, written by the old diggings, deserted cabins, and stranded steamboat hulks scattered along its banks all the way to St. Michael, on Bering Sea.

Tourist cameras clicked as we waved good-bye, bowling down the lake before a southerly breeze. The skeleton of the old town of Bennett, where thousands of men once whipsawed lumber for their crude boats, faded away behind us. In mind I contrasted our lone canoe with that tumultuous traffic of thirty years before, when boats of every description crowded each other for rowing room. Snow still lingered on the granite-capped mountains rising abruptly on our left. Accompanying us overhead was that graceful marathon flyer, the Arctic tern, who spends his winters on the fringe of the Antarctic.

Next morning we entered Tagish Lake beyond Bennett and skimmed at Carcross under a swinging bridge. A sloppy sea struck our beam as we nosed across the mouth of Fools Cove, among the breakers rolling in from Windy Arm. In summer the wind blows so strong at this place that the pine and spruce all lean to the

Photograph from Amos Burg

A BLUE HERON TAKES OFF

This beautiful bird ranges as far north as Prince William Sound. The white birds on the ground are gulls, which are incredibly numerous all along the coast. They swarm about the canneries in the fishing season.

northward. Below this point the wind blew a steady strain upon our canvas and scudded us into Lake Marsh by sunset.

Here the country became more open and the lowering ranges lost their blankets of snow. Ancient terraces along the right shore were bright with the magenta blossoms of the fireweed. Gulls and terns rose in alarm from little rock islands as we sailed by.

A congenial Stick Indian (so called because the tribe inhabits a region of small timber) put out in his launch with a slab of moose meat and wanted to tow us down to the foot of the lake. He was animatedly proud of his chugging motor, bought with money made by trapping the winter before, and seemed rather disdainful of our ancient means of propulsion. His vanity was short-lived. As he described the speed of his motor and the merits of towing, a squall filled our sail and we raced away before the breeze, leaving our friend astern, trying to overtake us and shouting quotations on his moose meat!

Next morning we decided we could shoot the straight white combers through Miles Canyon. Whitehorse Rapid, however, which terminates this formidable barrier three and a half miles below, convinced us with half a look that our sharp-prowed craft would be swallowed in the first comber. Here the whole river is funneled through a narrow rock channel, forming a mass of wild breakers succeeded by treacherous boils. Yet many men who ran these dangerous waters in old days had never handled a boat in their lives until they stopped at Lake Bennett to figure out which end of their oar went into the water! Wooden portage trams on either side of the river saved the lives of many whose eagerness for Klondike gold might otherwise have sent them to doom in this maelstrom. We regretfully clipped the wings of adventure by portaging to the foot of Whitehorse.

But anyone anticipating this joyride down the Yukon should not assume he has left the worst behind at Whitehorse. Open lower reaches, where the river

Photograph by Amos Burg

THE PARLEY IN THE WILDERNESS NORTH OF JUNEAU

An old-timer who has spent half of his long life in the north does not wait for the next month's newspaper to tell him what to think. He is typical of the northland breed, a distinct individual, full of tales breathing of the scent of the pines and clean winds.

sprawls into shallow inland seas and where one struggles against high winds and waves—not for minutes but for days at a time—still lie ahead and will amply satisfy any desire for conquest over Nature.

The town of Whitehorse, at the foot of the rapid, is the terminus of the railroad and the head of navigation on the Yukon. Steamboats built during the gold rush, no longer useful in the decline of trade, rest on the ways here like shelved volumes of adventure. The Mounted Police, romantic knights of the north, made a note of our boat, and we again embarked, this time on a racing current that carried us to Lake Laberge.

MAROONED FOR THREE DAYS

We sailed down the west shore of the lake, which is rather swampy at the lower end. The east shore rises almost perpendicular, crowned with projections of conglomerates and slate, which form pillars, turrets, and domes of fantastic shapes. On small islands flocks of swallows were catching insects. Beyond Richthofen Island, rising prominently in the middle of this 30-mile stretch of water, we had our last sail before a rising wind that grew to a violent mountain storm. In peril of swamping, we skirted the huge breakers spilling on the shallow shore. Unable to cross over to the head of Thirtymile River, as the Lewes River is known from Lake Laberge to the mouth of the Teslin, we were driven into a shallow cove, and marooned for three days by breakers that battered the shore.

I liked this camp. Unabating wind sang through our willow break. But the pleasure of eating wild strawberries and fishing for trout, which in early days were supplied to steamers by the ton, was clouded by the fear that we would be delayed and icebound before we could reach the Yukon's mouth. "Spoke," as Hill was nicknamed because he hailed from Spokane, even practiced carrying equipment up and down the beach to see how much he could handle, should we have to hike out. Our mosquito nuisance was abated a bit by the wind, provided we camped on open bars,

Photograph by Amos Burg

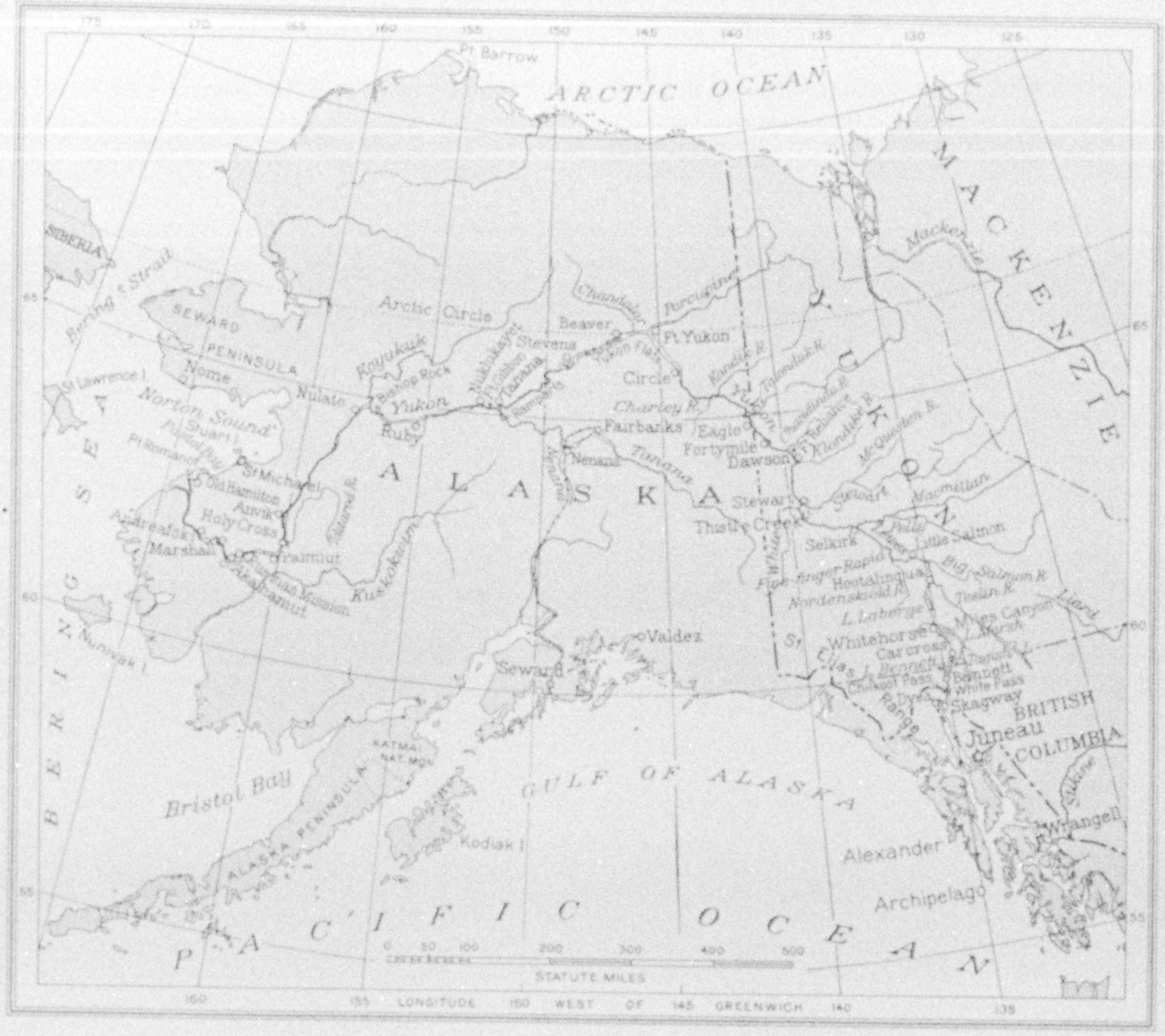
"SONG O' THE WINDS" IS HAULED OUT OF SALT WATER AT SKAGWAY

After voyaging northward from Juneau among the islands of the Alexander Archipelago, the canoe was shipped from Skagway over the White Pass Railway to Lake Bennett, where head the waters of the Yukon.

Photograph by Fred A. Hill

STUDYING THE EXPRESSION OF AMERICA'S NATIONAL EMBLEM

Bald eagles, or "white heads," are numerous along the Alaskan coast among the islands of the Alexander Archipelago. They often gorge themselves on dead fish gathered alongshore, especially on the great salmon rivers, until they cannot fly. Sometimes Alaskans complain that they interfere with blue-fox farming by killing the animals for food. This is a young bird.



Drawn by A. H. Bumstead

THE MIGHTY YUKON TRAVERSES THE BREADTH OF ALASKA

For 102 days the author and his companion traveled by canoe, river steamer, and launch about 2,500 miles, first through the Alaskan inside passage and then down the entire Yukon River from Lake Bennett to Norton Sound. His total expenditure for "tent-keeping" was $130.71. This did not include film used in photographic work, but it did include such indigestible articles as shaving soap, thread, and 30-30 rifle shells. The cost of food was 86 cents a day for two.

where it could blow them away; but the huge black gnats were higher-powered and often came sailing into camp in a high wind to torment us until a fly-swatter put them out of circulation.

During a lull in the wind, at midnight, we threw our bags of equipment into the canoe and fought our way around a shallow point to the head of Thirtymile River. It proved the fastest stretch of water on the Yukon. Narrow and winding, it sometimes runs under high perpendicular banks of clay with crescent-shaped crowns of pine and spruce. Gulls fish on their private rocks at the head of eddies. It took us six hours to run to where the Teslin comes in and the two streams become the Lewes.

On our left was the village of Hootalinqua, important in the early days as the place where the all-Canadian route by way of the Stikine and Teslin rivers joined the Skagway route. Some Indians on their way up the Teslin were camped here, all trying to get their motors started. As I stood up to photograph our first Indian encampment, a scowling chief ordered everyone into the tents.

YUKON HOSPITALITY DISAPPEARED WITH THE PROSPECTOR

The sun was warm as we coasted down the Lewes, over the Cassiar Bar, and through the Semenof Hills. Here gold was found in placer deposits a decade or two before the rush started. At noon we

Photograph by E. Andrews

SKAGWAY, GATEWAY TO THE KLONDIKE

Other routes were the all-water passage by way of Bering Sea and up the Yukon River from St. Michael to Dawson, the Edmonton route by way of the Mackenzie, and the Stikine and the Teslin Rivers route out of Wrangell. The sheet of water stretching away in the background is the Lynn Canal, a fjord discovered by Capt. George Vancouver and named after his birthplace in England.

Photograph from Amos Burg

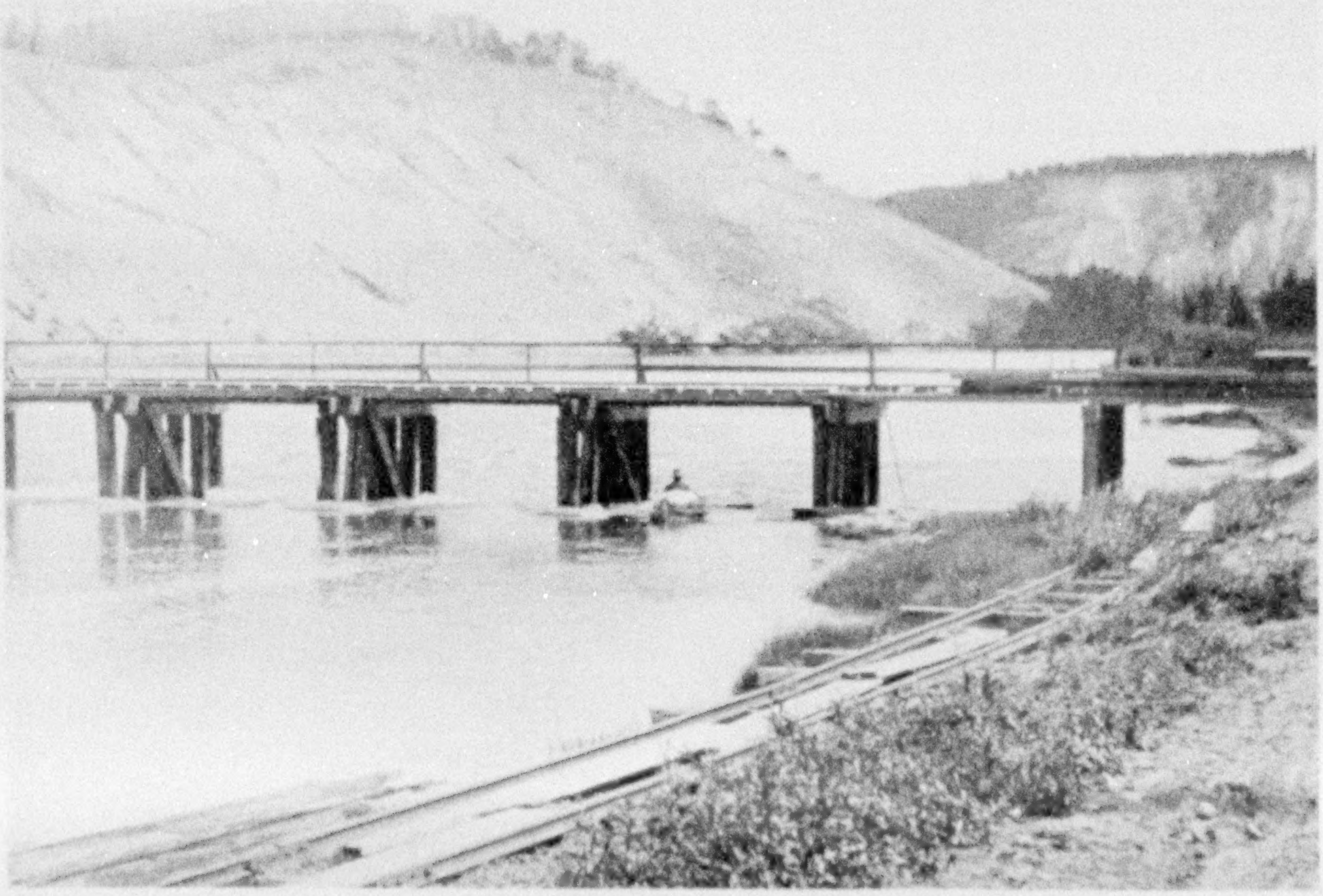
LOOKING DOWN LAKE BENNETT, WHERE THE GREAT ADVENTURE BEGAN

The canoeists' point of departure on the Yukon, bound for St. Michael, on Bering Sea. The lake, one of the most beautiful in Alaska, is 27 miles long and from half a mile to five miles wide. It is the chief forming basin for the trickling waters of the Yukon. In the foreground is the abandoned frontier town of Bennett, once the head of navigation on the river. When the railway was built around Miles Canyon and Whitehorse Rapid (see illustrations, pages 96 and 97), it was superseded by the town of Whitehorse.

Photograph by Fred A. Hill

IN THE MAD DAYS OF '98 THE BANKS OF LAKE BENNETT HUMMED LIKE A SHIPYARD

Nearly 20,000 weird craft were thrown together here by wild-eyed gold-seekers, frantic to be the first to push off to their El Dorado at Dawson as soon as the ice broke. This was the site of the author's first camp.



Photograph by Amos Burg

PASSING THE ICE DAM AT THE FOOT OF MARSH LAKE

The dam was constructed by the White Pass Railway to hold the ice back from the upper lakes and to keep it from jamming in Lake Laberge. Ice remains in the lakes almost a month after it passes down the river, which breaks up at the rate of about 100 miles a day.

Photograph by Amos Burg

"SPOKE" TAKES SOME ARCTIC TERNS ON THEIR FIRST FLIGHT AT ROCK ISLAND, IN LAKE MARSH

These birds are the migration champions of the world. They nest as far north as land has been discovered, but leave the Arctic when grown for a sojourn on the fringe of the Antarctic Continent, 11,000 miles away.

passed the mouth of the Big Salmon. Like most tributaries of the upper Yukon, it is bordered by scenic ranges.

Woodcutter cabins, whose occupants keep hungry steamboats supplied with cordwood, made the sweeping river less lonely. We wondered why we weren't invited more often to dinner, why the Yukon hospitality we had heard so much about wasn't manifesting itself. Spoke's explanation was that grub was too expensive to ship in and we looked too hungry. Now the prospector is gone and woodchoppers are little more than wage-earners. Some of them own a horse, but in the winter, when it is used to haul wood to the river, its upkeep on imported hay and grain would almost operate a yacht. Sometimes the men hailed us and we glided ashore, expecting to imbibe a cup of tea, only to be asked to deliver a letter to the camp below.

Seventy miles below Hootalinqua we nosed into Little Salmon village, where an Indian and two Malemutes blinked lazily at our approach. A member of the Anglican mission here was aiding many natives stricken with influenza. It was a

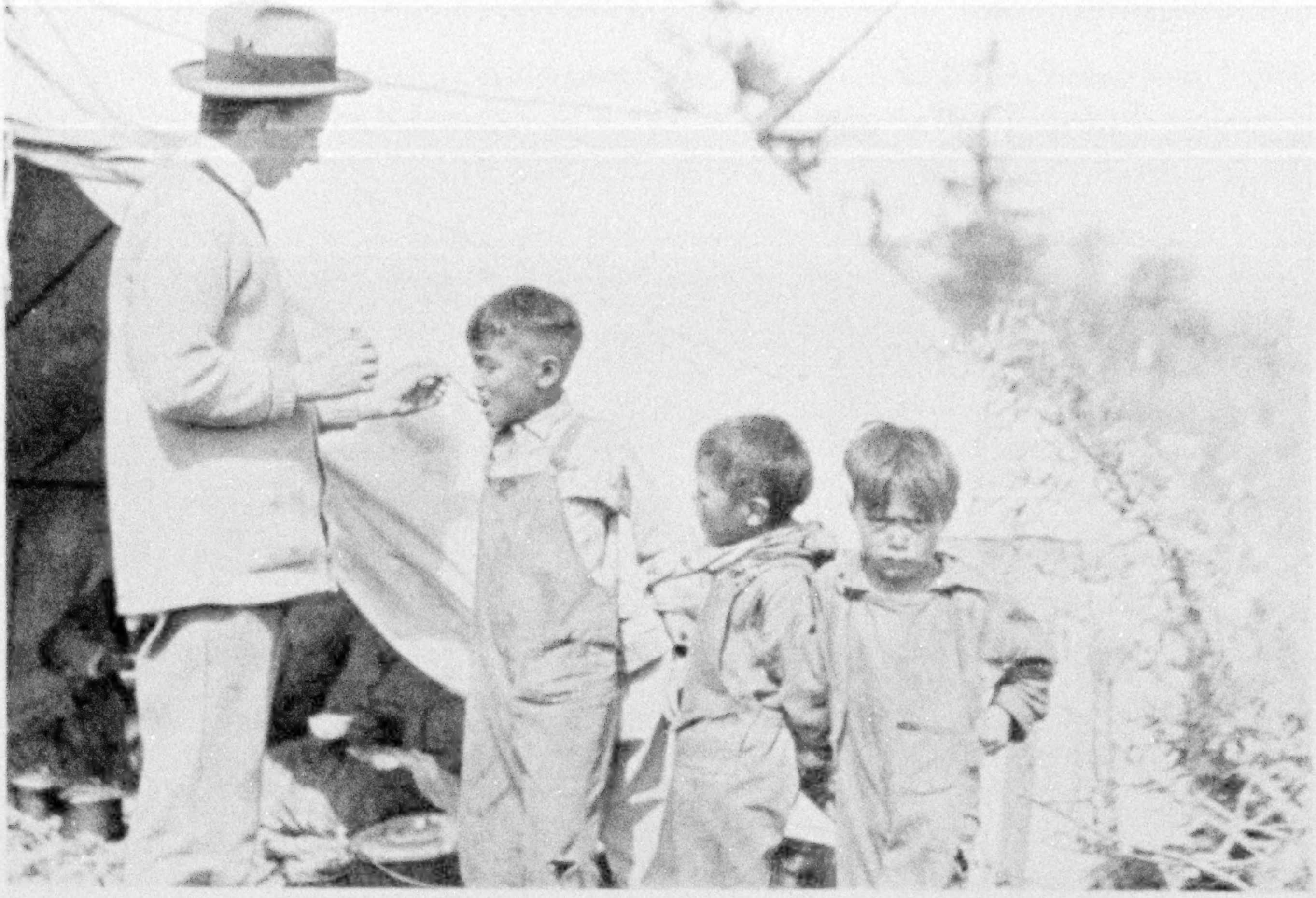
Photograph by Amos Burg

"SPOKE" CHATS WITH ONE OF CANADA'S "FINEST"

The Royal Canadian Mounted Police are agreeable and accommodating individuals, not always veterans of the country, but often young men enlisted in the British Isles to seek adventure in the New World. They keep strict account of every person who enters and leaves the Yukon Territory. At Whitehorse they put a number on the *Song o' the Winds* and traced the American canoeists until they had crossed the International Boundary into Alaska below Fortymile (see illustration, page 106).

dismal camp. Its wreckage of a race, like a tattered page from the gold saga, revealed primitive man crushed almost to extermination by civilization.

With the bold, reckless whites who swarmed into this wilderness came also a certain riffraff catering to the savage's weakness for rum and debauching his women. Conscientious workers of Government and missions could do little against such odds to save these Indians from degeneracy. Now they are a scattered and forlorn race, merely existing from day to day in the slush along the white man's frontier. Their colorful native costumes, observed by Frederick Schwatka on his rafting voyage down the Yukon in 1883, have given place to the cheap, dingy



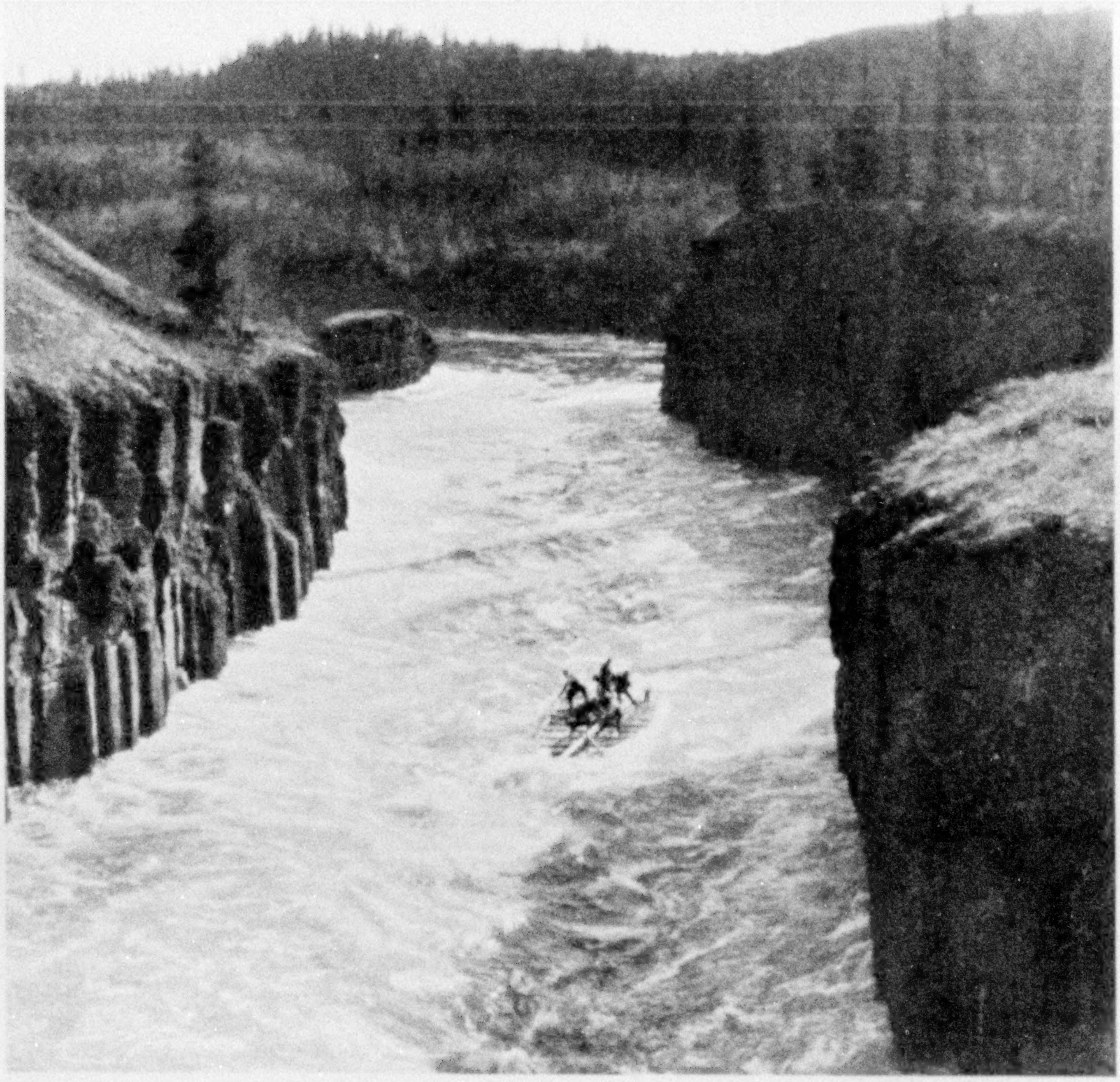
DOSING INDIAN BOYS OF LITTLE SALMON FOR INFLUENZA

They solemnly took their medicine and grunted their thanks. The missionary said they showed their appreciation indirectly, and that they have a saving sense of humor.

Photographs by Amos Burg

A NOVEL WAY OF MOVING A CABIN

Because of the diminishing Indian population at Little Salmon, the trader decided to move his store downstream. The logs were numbered, so that when the cabin was reërected each log could be put exactly in its place without trouble.



Photograph by Amos Burg

A RAFT SHOOTS THE NARROW CLEFT OF MILES CANYON, DREAD OF EARLY-DAY GOLD-SEEKERS

The canyon is more than a mile long and its basalt walls rise straight up from the water for about 200 feet. Above the upper gate the river gradually narrows from 1,200 feet to 150 feet, with the current increasing to an alarming speed. Many lives were lost here in the early days.

clothes and calicoes of the white trader. The bright, intelligent faces that eagerly welcomed the white man have become sullen maps of wasting disease.

We helped the missionary empty his salmon nets. These fish were ragged and gaunt from battering their heads against the current in their hungry trip from Bering Sea. Such salmon have been found as far up as Lake Bennett; but their numbers diminish rapidly above Dawson, and are there no longer considered a staple article of native food. Hungry Malemutes slunk about the tent like sick wolves; they took proffered salmon with indifferent grunts.

Toward sundown squalls of wind and rain drove up the river. Lingering northern twilight brought deep silence. In the spot glow of a weird moon, three Indians floated downstream on a raft. Hunched over like huge bullfrogs, they seemed to symbolize the passing of their race on a death trail to shadowland. Indians who cannot afford an outboard motor hike upstream and float down on logs.

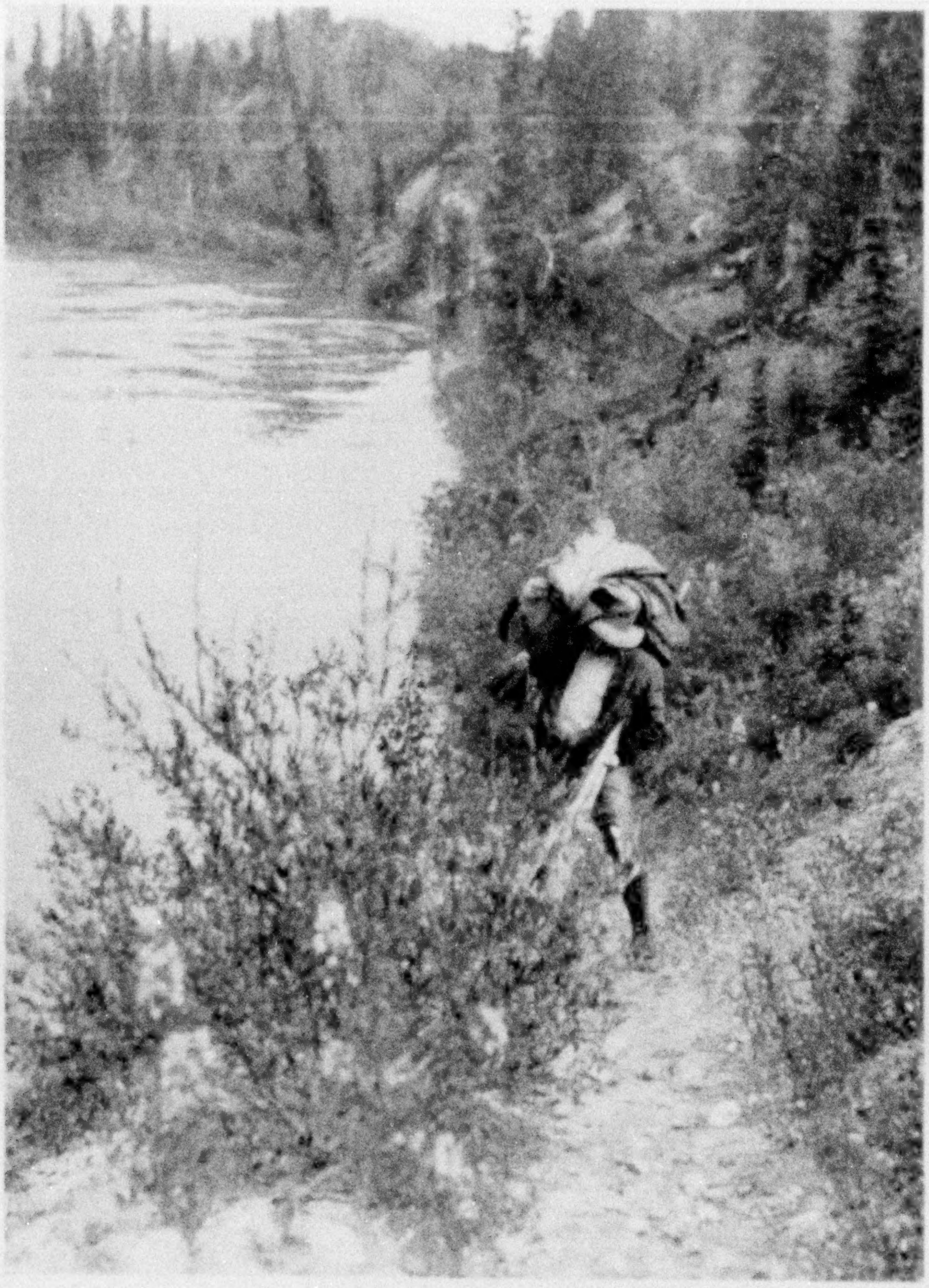
Brown ranges crowded in on the river as we approached Five-finger Rapid be-

low the mouth of the Nordenskiöld. Four rock towers, their tops fringed with stunted spruce, almost choke the river, forming five channels through which the current tears with great velocity.

A PHOTOGRAPHIC COMEDY OF ERRORS

I took the camera, scrambled over the edge of the cliff to the foot of the rapid, and made a set-up looking upstream. Through the finder I could see the whitecaps leaping. Then I shouted for Spoke to make the descent. Suddenly I saw him just below me. He had come down the first channel while I had watched the second one! Even the gulls and terns seemed to laugh at us.

Five miles below here we descended Rink Rapid, piloting the canoe through the last roar we were to hear for a thousand miles.



Photograph by Amos Burg

CLIPPING THE WINGS OF ADVENTURE

"Spoke" is portaging equipment up the trail at Miles Canyon to the foot of Whitehorse Rapid, which terminates the canyon. The wild combers of the rapid would have swallowed up the canoeists' sharp-prowed craft at once (see, also, text, page 86).

Next afternoon, below Hellsgate, among the Ingersoll Islands, luxuriant green vegetation and wild roses loaded the air with a heavy fragrance. Cruising among the islands, we sighted the great lava palisades of Pelly River Ramparts, where that stream, coming in from the east, joins the Lewes to form the Yukon proper. A moaning symphony of Malemute howls welcomed us at Selkirk, just below. Schwatka (see text, page 94) described two of these dogs as having unusual pugnacity, fighting until they became so tired they had to lean against one another to rest.

Selkirk was formerly a Hudson's Bay post and fort. It was built in the forties by Robert Campbell, who entered the Yukon Valley by way of the Liard and Pelly rivers. Warlike Chilkats from the coast destroyed it in 1853 because the fort had ousted them as intermediate traders with the interior Indians. During the gold rush Selkirk revived. To-day it serves as a trading post for the Indian and white trappers from the Pelly and Macmillan districts.

When we left Selkirk we entered what Schwatka described as the Upper Ramparts. They extend almost to Circle. Indian campfires blazed in twilight down the river, and on the night wind drifted odors of smoking caribou meat. We heard at

Photograph by Amos Burg

A VOLCANO OF PENT-UP ADVENTURES

This French-Canadian trapper told yarns all night, with only two hours' rest, and shouted the end of one as the canoeists rounded the bend next day.

Photograph from Amos Burg

WHEN PURSUED, CARIBOU SWIM IN CLOSE FORMATION

The Barren Ground caribou is one of the most important animals of the Arctic. Scarcely anything manufactured equals caribou skin as warm clothing. In many places in Alaska and arctic Canada the natives live for long periods exclusively upon caribou meat. The number of animals is reported to have decreased alarmingly and in some sections that once pastured vast herds only an occasional scattered band is now seen.

THE GRAVEYARD NEAR SELKIRK FLOURISHES IN PROPORTION TO POPULATION

The old missionary in the foreground pointed out the advance of civilization as recorded in the painted artistry of the wooden monuments marking the graves.

Photographs by Amos Burg

MAROONED BY BREAKERS AT THE HEAD OF WINDY ARM, IN LAKE TAGISH

"Spoke" is enjoying a siesta while the author photographs. Every fifth day, if the wind was blowing, the canoeists camped on an open bar, cooked dried beans, and conducted experiments with pork and red peppers. If the wind did not blow, the mosquitoes hung around, anxious to make blood tests. Beans were served for lunch and dinner and something jokingly referred to as waffles for breakfast.

FEW ANIMALS SWIM SO HIGH OUT OF THE WATER AS THE CARIBOU

It takes to the water readily and swims long distances, for its thick coat, with air in and between the hairs, acts somewhat as a life-preserver. The normal cruising speed is about two miles an hour, but on a spurt the animal can go as much as five miles an hour (see, also, text, page 102).

Photographs from Amos Burg

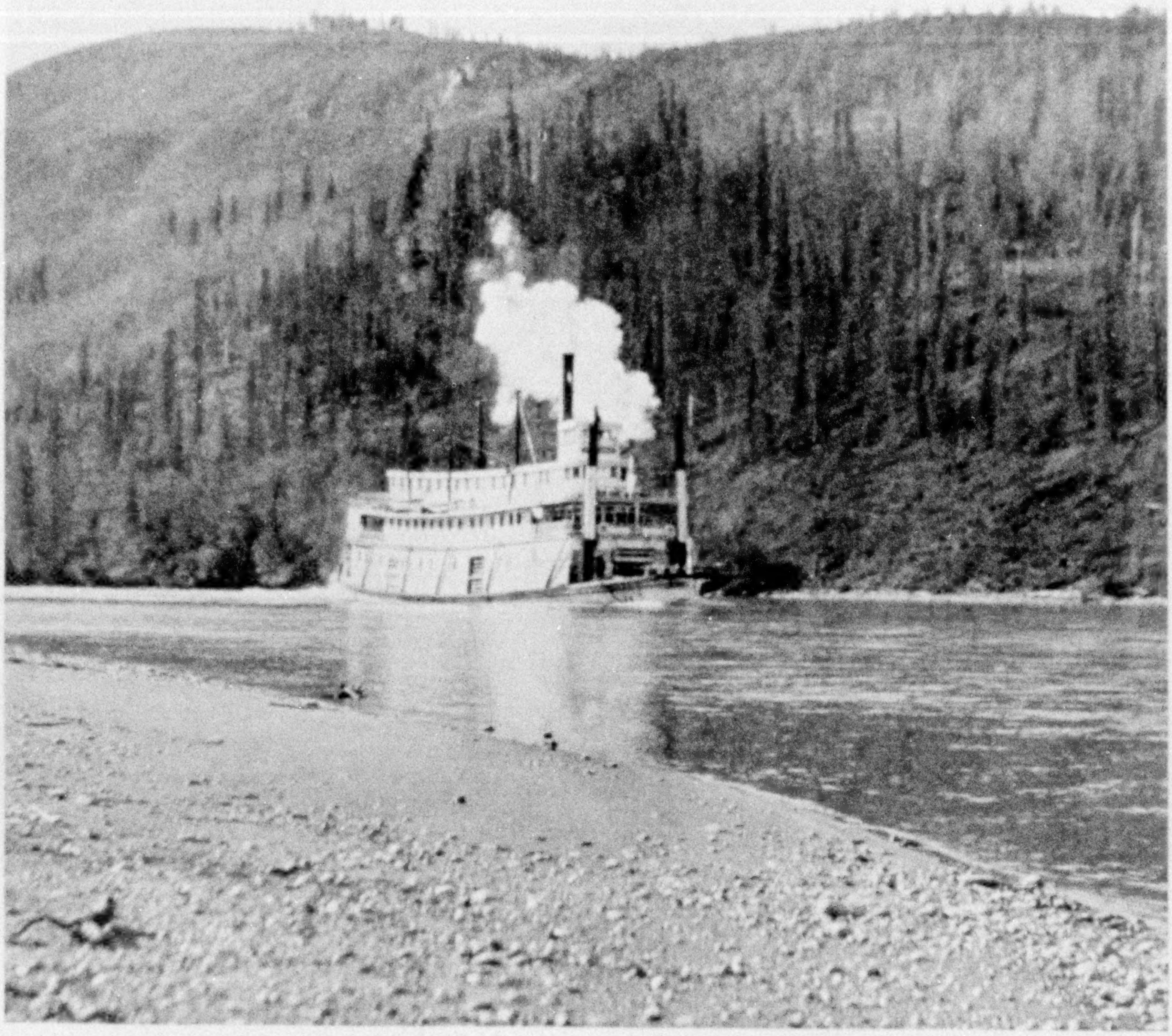
TENS OF THOUSANDS OF CARIBOU ANNUALLY CROSS THE YUKON

The author struck the annual caribou migration traveling east below Selkirk July 15, their path forming a boulevard 500 miles wide, extending down the Yukon River to Circle. The main herds had crossed two weeks before, and only small straggling bands were seen, but the numerous trails ribbing the steep hills on the east bank were evidence of the thousands that had crossed. On the west bank these trails are not pronounced, as the caribou enter the river through ravines, but climb out usually at any point where the current carries them.

Photograph by E. Andrews

DAWSON IS THE METROPOLIS AND CAPITAL OF YUKON TERRITORY

The gold-seeking Argonauts who swarmed down the "Trail of '98" and boomed Dawson into prosperity are gone. The air of desertion worn by the emptied cabins is depressing until one experiences the warm hospitality of the people. The traveler is courteously treated by Government employees and the picturesque red coats of the Royal Canadian Mounted Police lend color. Steamer day is a gala occasion, when the population seeks the excitement of the wharf and the Indians come up from a near-by village to watch the tourists (see, also, text, page 105).



Photograph by Amos Burg

THE "WHITEHORSE" BUCKS THE CURRENT OF THIRTYMILE RIVER

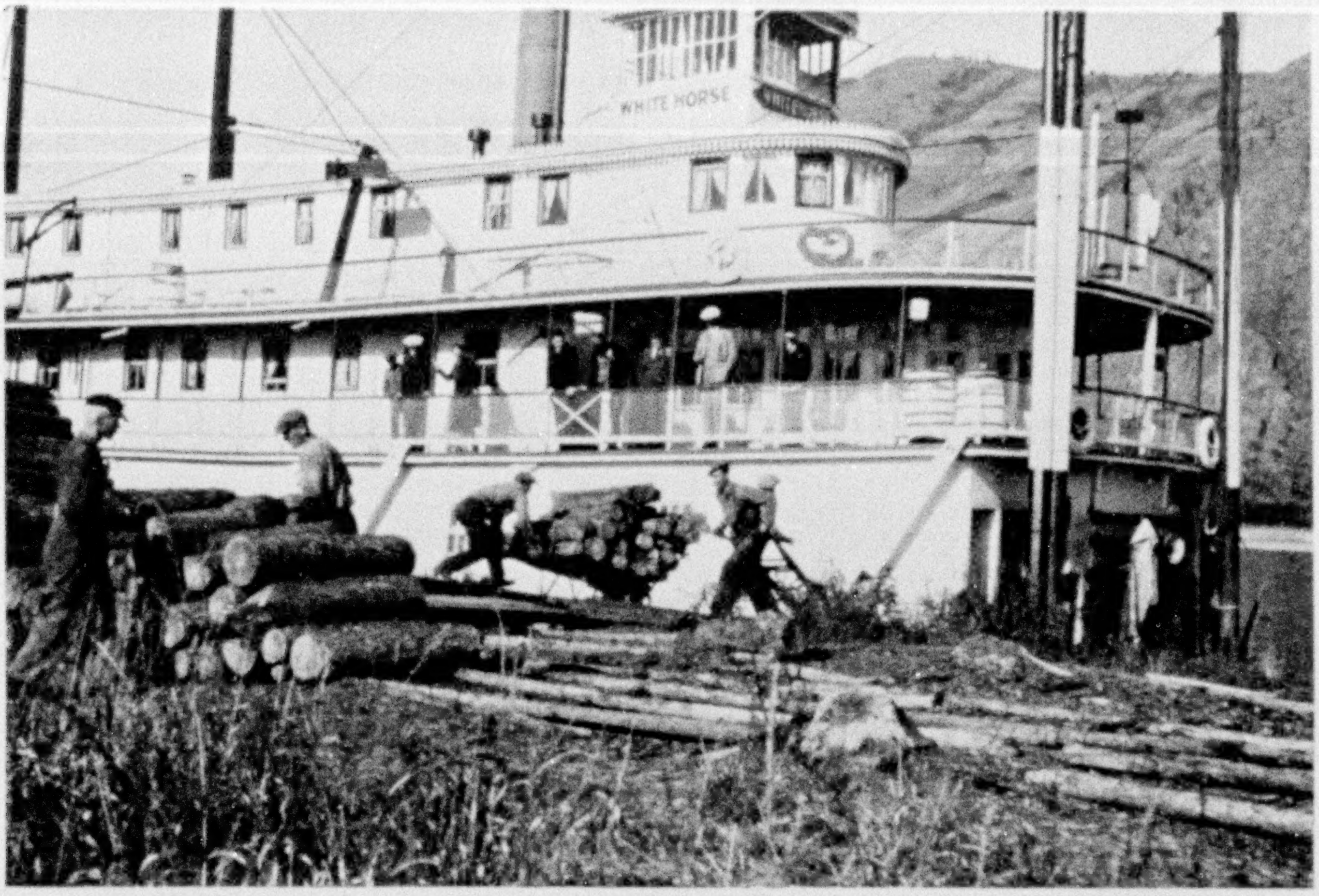
Wood-cutting for these steamers gives employment to a number of men on the upper river. About a cord an hour is burnt, mostly spruce (see, also, opposite page).

Selkirk that the main caribou herd had passed, but that stragglers were still crossing the river. By the time we made our next camp the lava bluff rampart that runs down the right wall from the mouth of the Pelly had been replaced by encroaching mountains. It was late by the time we had our fire crackling on a bar and our tent up, but for a long while I lay on the sand and watched the evening star rising up the canyon.

CARIBOU TRAILS ABOUND

Spoke's desire for a caribou steak was almost gratified here when a herd came through camp at dawn. They were the first large wild animals I had ever seen outside of a zoo. I fired wildly and pursued them across the river in the canoe; but they were powerful swimmers and scrambled to the top of the bank, then looked back before disappearing into the brush.

At Isaac Creek we found why no one may ever have followed a caribou migration. We mistook a herd of them in the river for geese! They were swimming in close formation and finally reached an island. We followed them with the movie camera for a short distance through the brush, but clouds of mosquitoes made us forget all about the animals. With



A YUKON STEAMER "WOODING UP"

When a steamer ties up at a landing to "wood up," every mosquito in the neighborhood knows it and comes out for blood.

Photographs by Amos Burg

ONE OF THE FINEST CABINS ON THE YUKON

The mining recorder and roadhouse keeper at Thistle Creek demonstrates what can be done in the way of gardening with skill and patience.

Photograph by Amos Burg

MAIL-ORDER CATALOGUES BRING FIFTH AVENUE FASHIONS TO YUKON FISH CAMPS

Such "literature" furnishes an incentive to the natives, particularly the older ones, to read English.

slapping hats we ran back to the canoe to soothe our wounds in the coolness of the river.

All day we observed caribou trails ribbing the steep mountain sides. Indians sometimes get them on a bar and shoot down the winter's supply of meat for the village right on the spot.

At Britannia Creek two prospectors said that several thousand caribou had crossed to the east the week before. They described the calves as frolicking like long-legged dogs (see pages 98, 100).

These men had broken their only watch and had constructed in front of their cabin a wooden sundial, which they said was not very effective when the sun shone almost 20 hours a day.

While we were looking for a bar with driftwood for camp, we got the only goose we had to eat on the whole voyage. An eagle swooped across our bow and landed among a half-dozen young geese, who made the water—all but one, and he stayed with the eagle. Our harmless method of firing at game and missing it alarmed the eagle; he released the goose, which ran down and fell into the water, where we picked him up without slackening our speed. From his mountain peak the eagle

later watched us at our camp, devouring the result of his labors.

The only place we ever grounded was on the Kirkman Creek Bar, which had held seven steamers fast at one time in the fall of 1903. One of the steamers, the *Canadian*, now rotting at Whitehorse, had to remain there all winter. We struggled across the mud for almost an hour.

"SPOKE" CHASES A CARIBOU

Spoke and I shot our first caribou down below Kirkman Creek. After that, what with poor marksmanship and benevolent dispositions, we didn't harm another animal on the Yukon. This one was a lone buck swimming the river, and Spoke puffed at the oars before we overtook him. I missed him every time I fired, as he splashed in the shallows. Spoke told me to stop; that I was wasting shells, and that he would run him down with his knife. A few moments after Spoke and the caribou had disappeared over the hill, Spoke shouted back, "He's fainted."

Sure enough, the animal was lying dead in a shallow slough. There wasn't a bullet hole in him that we could find. Spoke contended that the only time the caribou wasn't afraid was when I was firing at him, and that he died of fright when Spoke took after him with the knife.

That evening we camped on a rocky beach with a French Canadian, Fortier, who was returning from a four years' trapping expedition on the upper reaches of the White River. He was poling upstream to Jim Derry's trading post at Coffee Creek to sell his outfit and dogs, so he could go "outside" and cure his rheumatism.

He was a volcano of pent-up experiences. He talked all night with only two hours' rest, and shouted the end of a yarn after us as we rounded the bend next morning. He said he kept the Indians off his trapping grounds by planting wolf bait and making them think it was poisoned. To save their dogs, they avoided his territory. Coffee Jack, an Indian gifted with grim humor, had replied to Fortier that he was going to shoot him and tell the Mounted Police that he had mistaken him for a moose.

Below Thistle Creek we passed the mouth of the White River, whose milky waters rise in the glacial beds of the St. Elias Range and muddy the Yukon so that it never again regains its green clearness. When we saw the White thus discoloring our drinking fountain, we grew thirsty and looked for clear ribbons of water to fill our jug.

Soon the ranges fencing the Stewart River valley appeared over the spruce tops and on a bend ahead the white buildings of Stewart flashed in the sun. On summer's breeze came a certain wonderment of what adventure awaited there.

Stewart River was known for its gold-paying bars ten years before the Klondike was discovered. In 1884 news that two men had made $35,000 brought many stampeders into the country and the first general prospecting for placer gold began. To-day the Mayo mine, near the headwaters of the Stewart, is the hope of the Yukon Territory and its lead-silver ore forms the bulk of the freight on the Yukon (see page 120).

In twilight we ran under a chain of rock bluffs, with the gold of sunset dancing on channels between the islands. Passing a herd of caribou next day—and a mother black bear with two cubs—Moosehide Mountain loomed behind Dawson; we nosed into the bank below the noisy waters of historic Klondike River. Here the miner and his pick have been replaced by mammoth bucket dredges (see page 106).

DAWSON IS STILL THE METROPOLIS OF THE KLONDIKE

Once the boardwalks of Dawson shook under the tread of 10,000 people. To-day, still the metropolis of the Klondike, Dawson has been left, from shrinkage of population, to resemble a big empty show tent with most of the lights out. For three days we camped on the beach with an old character, "Sourdough" Smith, making experiments in flavoring beans with red peppers (see page 101).

We dropped downstream below Dawson in a drenching mist. Fish wheels, useless in the clear water above the White, now appeared along the banks, usually flanked by covered racks of red split salmon. With busy air we took pains to photograph the first wheel, little suspecting that we should hear them creaking industriously all the way to tidewater.

Photograph by Amos Burg

AN ELECTRIC GOLD DREDGE ON THE KLONDIKE RIVER AT DAWSON

Photograph by Fred A. Hill

CHECKING OUT THROUGH THE CANADIAN CUSTOMS AT FORTYMILE BEFORE CROSSING THE BOUNDARY INTO ALASKA

The town derives its name from the fact that it was 40 miles from Fort Reliance. It was the pioneer gold-mining settlement on the upper Yukon.

These wheels were invented on the Fairbanks stampede, some 28 years ago, and quickly spread to all muddy glacial streams where fish cannot see the scoop (page 116).

While eating a lunch of corned beef and sea biscuits, we drifted by the site of Fort Reliance, 7 miles below Dawson. When Schwatka saw it, it had just been abandoned by famous Jack McQuesten (called by him "McQuestion"), of the Alaska Commercial Company. He left, the Indians explained, because he was sick, but McQuesten explained that he was sick of the Indians. Several ugly-tempered medicine men had threatened to kill him for interfering with their drug business.

Below Klondike River the Yukon narrows between chains of striking yellow bluffs extending down to Fortymile. This place, once a strategic spot on the Valdez Trail, is to-day yawning sleepily.

Photograph by Amos Burg

NO MAIL FOR THE MINER AT NATION

A half-dozen log cabins, occasionally occupied by miners who work Fourth of July Creek, line the bank across from the mouth of Nation River, after which the settlement is named. Fourth of July Creek was named after the day of its discovery.

Less than a hundred miles below Dawson, we passed from Yukon Territory into Alaska. The boundary is marked by a lonely cabin and belt of cut timber running over the river ranges. All day we had been chased by a black cloud that gave us a deluge of Canadian wind and rain in American territory, just as we were trying to drift down on some sleeping caribou. They lay stretched out as though they were dead and raised their heads only to gaze curiously at us when our splashing paddles awakened them.

Through a soft falling mist the 25 log cabins of Eagle Indian village appeared on our left below the Eagle River. Slabs of caribou meat were drying on racks set on the beach high enough to be safe from the howling dogs staked under them. This is a permanent village, numbering about 80 persons, the largest Indian village we had passed so far. Women of these villages seem more industrious than the men. They cut wood, carry water, keep the family supplied with footwear, gloves, and parkas and make beadwork for sale. Many have separate accounts at the store (see page 108).

The Yukon Indian, seen out of his native environment, appears stolid, stupid,

Photograph by Amos Burg

"OLD GLORY" FLIES AT HALF MAST FOR AN INDIAN FUNERAL

The flag is in front of the U. S. Office of Education schoolhouse at Eagle, the first village on the American side of the International Boundary. Racks of caribou meat were drying elsewhere along the beach, built high enough to be out of reach of the howling Malemutes staked under them.

Photograph by Amos Burg

HIS HOME IS INSIDE THE ARCTIC CIRCLE

Fort Yukon is the largest Indian community on the great river. It is also a trading point for many outlying settlements on various rivers, whose Indian population resorts to the Yukon metropolis on Christmas and Fourth of July to exchange furs for the white man's "grub," ammunition, and other commodities.

Photograph by Grafton Burke

THE AGE OF INNOCENCE AT FORT YUKON

The traveler is impressed by the charm, simplicity, and sweetness of these northern children, who spend their early days in the enchanted wilderness world along the Yukon. This childlike attitude is delightfully refreshing and is typical of many of the inhabitants who dwell close to the Arctic Circle.

Photograph by Amos Burg

HANGING A SPLIT SALMON ON A DRYING RACK

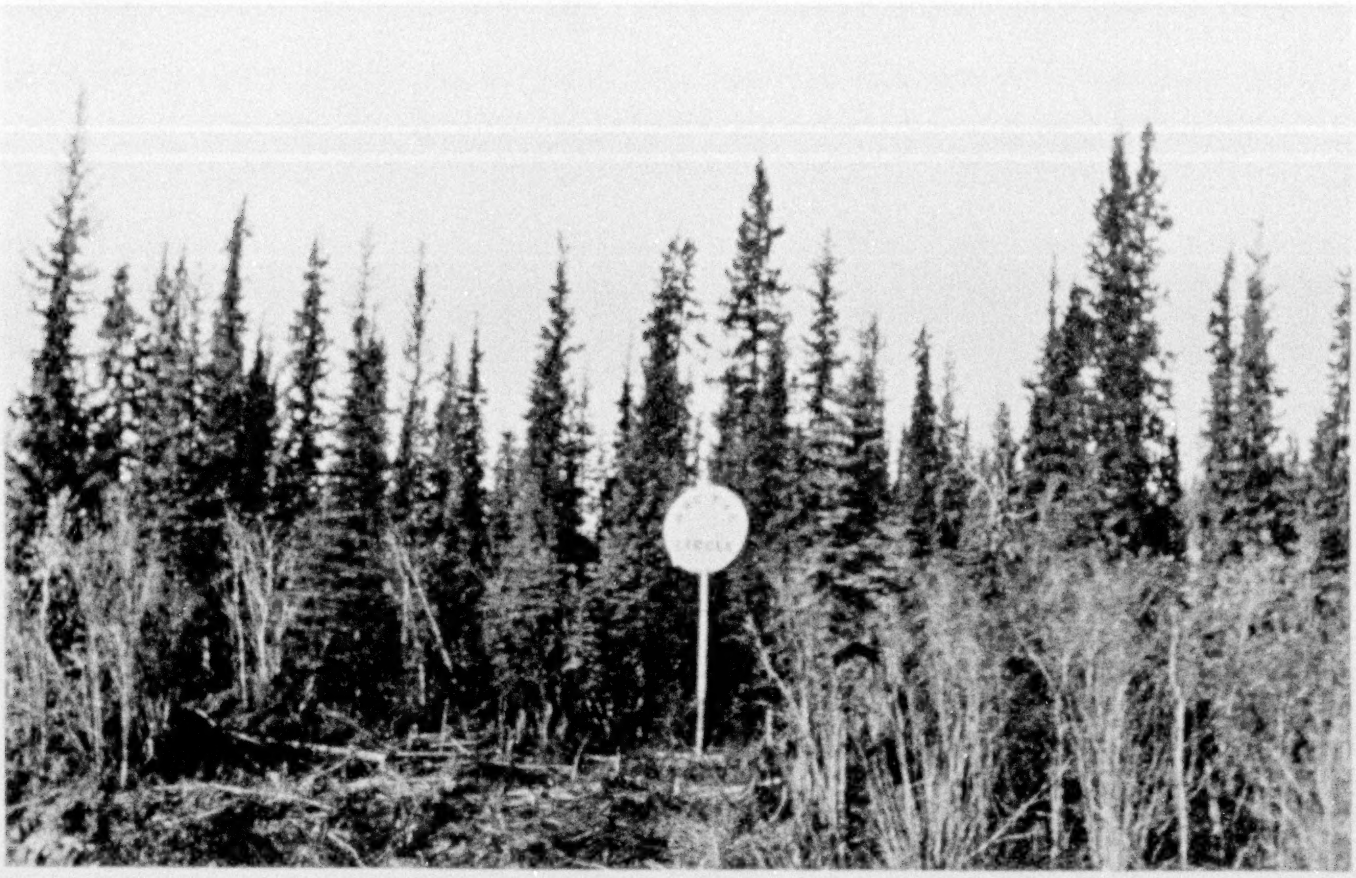
It takes five pounds of green salmon to make one pound of dry, and in the course of a season this fisherman dries more than two tons, using the fish heads and backbones for dog food. Above Tanana, salmon begin to lose their fatness and become gaunt from long fasting and travel against the powerful current of the Yukon. They make the entire journey from the sea to their spawning grounds without eating.

Below Eagle we voyaged under a drizzling rain all the way to Circle. Caribou were swimming the river in small bands, and it kept us busy running them down to get close enough for pictures. By cutting in ahead of them, just before they reached the shore, we could photograph them swimming the river two or three times. As they reached the shallows they set up a great splashing.

The caribou are curious, and they seem to mistake objects even when they are close to them. The old-timers say they are nearsighted. We landed below the Tatonduk River to photograph 30 caribou standing on the bar. I got within 50 feet of them, only to find the camera had jammed. As I ran back to the canoe to change the film, I heard the thud of hoofs behind me and found the entire herd chasing me up the bar. When I stopped, they stopped too and blinked their eyes. Spoke said that it should take the conceit out of anyone to be mistaken for a fellow-caribou.

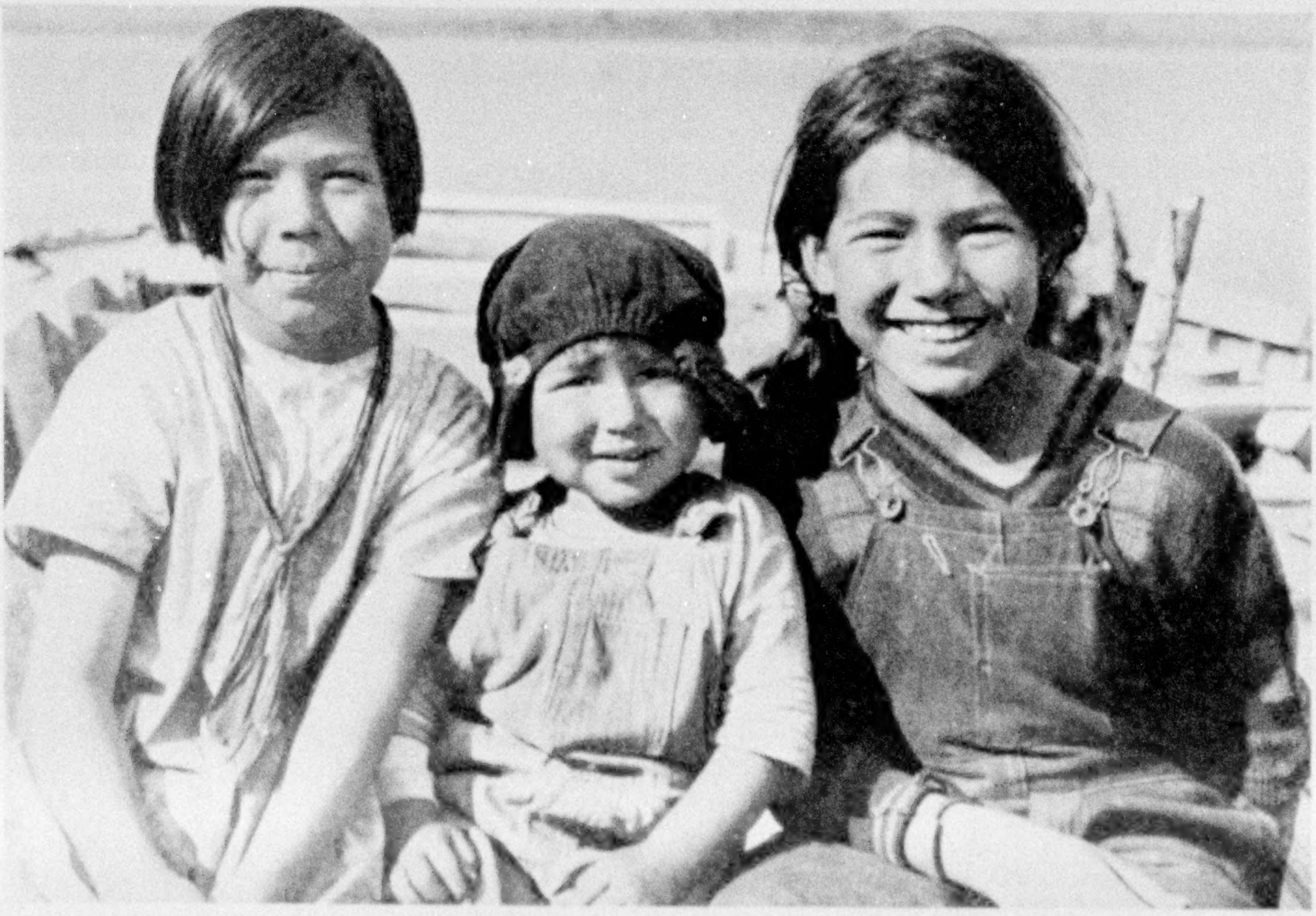
irresponsive, and sometimes arrogant. At home he is distinctly an individual, cordial, affectionate, often sensitive and proud. His appreciation was always great when we gave him tobacco. Nearly all men, women, and older children use it. The Government school has so impressed these natives with the need for cleanliness that the whole village will criticize one who does not keep his yard clean. This is not easy, as each family has children, dogs, woodpile, harness, drying meat, and hides to keep in order.

Sometimes we passed black bear, ravens, and gulls feeding on carcasses of caribou drowned while swimming the river. At Charley Creek (the local name for Kandik River) an old sourdough who ran a summer dog camp said that he had found as many as four caribou at one time drowned in his fish wheel. His eyes twinkled when we told him about the eagle killing the goose (see, also, text, page 104).



A MARKER THAT THRILLS THE SOUTHERN TOURIST

The author passed this sign just before reaching Fort Yukon, going north from Circle. Since Fort Yukon is slightly north of the Arctic Circle, clear weather there at the end of June permits a view of the midnight sun, for which boatloads of tourists come this far down the Yukon every year. The residents call them "sunners."



Photographs by Amos Burg

CHILDREN OF THE YUKON WILD

Their home is on Charley Creek, the local name for the Kandik River, a tributary of the Yukon. The children, who are supported by the missions and kept from year to year, make much headway. The chief difficulty comes from their parents shifting around from village to village and back and forth between their hunting and fishing grounds.

Photograph by Amos Burg

LITTLE MABEL SUBSTITUTES A FISH FOR A DOLL

Native children are well-behaved and generously share their meager possessions with one another. A stick of gum, after it is chewed awhile by the owner, will be passed on to friends for further exercise in other mouths. All the time that the author and his companion were on the Yukon they did not hear a quarrel of any kind. The children tussled, but never used their fists.

Next day we stopped at Woodchopper Creek, famous for the number of mastodons unearthed in mining days. In warming ourselves at the roadhouse after a morning of chilling fog, the conversation was monopolized by a trapper from Charley River, who had made a study of the mosquito. He recalled, or pretended to, an article in some past NATIONAL GEOGRAPHIC MAGAZINE which had stated that only the female bites. He said he knew better. Spoke and I were drawn to his views, but thought he should include the mosquito children.

Late in the evening we stopped at a high bluff on the right, where two men were digging into a slide, searching for a phantom mine. The original discoverer had forgotten its location, but had floated down the river searching for it every summer for 20 years, until he died of old age. These were the only operations we saw actually on the river.

Seeing the Yukon through the eyes of tenderfeet, we had a wholesome respect for old-timers like this one. He made us feel like a small boy with his first air gun.

There was a charm of shyness and native simplicity in his half-breed children, dressed in their bibbed overalls. The sixty-odd dogs staked along the bank, which we regarded as savage Malemutes, the children handled like toy poodles, as we took their pictures. Their summer home consisted of one cabin, with bunks slung along the walls to fit the length of each child.

Caribou were crossing the river all next day, as we neared the Yukon Flats. A summer hailstorm spattered our faces as we paddled into Circle, accompanied by a grinning Indian wedged in the bottom of a canoe so small that he seemed to be bulging over its sides. We pitched our tent on the bank, watched with interest by some Indian girls, who immediately began to pepper it with mud.

Circle was founded in the early nineties, when gold was discovered on Mastodon Creek. Soon it boasted that it was

the largest log-cabin village in the world. When it was deserted, in the Klondike stampede, many of these cabins were consumed as firewood. As in most Yukon villages, the majority of the fifty-odd natives are tubercular, have defective eyesight or hearing, and are otherwise diseased.

After midnight we were awakened by a booming voice and a swish of paddle wheels. We looked out to see a little short mate, with a giant voice, on the ore barge of the *Yukon*, bound for Nenana by way of Fort Yukon and Tanana. It gave me an idea. We would ride 85 miles through the miserable Yukon Flats to Fort Yukon. A word to the pilot in regard to the work we were doing on behalf of the caribou and we were northward-bound, with *Song o' the Winds* aboard, when the *Yukon* sailed for Fort Yukon, on the great Arctic Bend.

Photograph by Amos Burg

PURGATORY'S PATRON SAINT

When the steamer passes, a tug on a rope sets this horned individual to waving at the passengers. In the early days some travelers passing down the river missed this place and asked the old-timer what he had done with the sign on the bank spelling Purgatory in big letters. He said he had taken it down because he needed the wood.

Dawn found us traversing the great network of islands through the Yukon Flats, where the Yukon is spread out to a width of 10 to 20 miles. Ranges on both sides veer away from the river. To the left a series of isolated peaks are seen over the tops of high spruce trees on the islands.

When we landed in Fort Yukon in the afternoon our steamer tied up there and gave the river bank the lively appearance of a Mississippi levee town. Here is the largest Indian community on the Yukon. Its natives are recruited from derelicts and stragglers of various tribes on the Yukon and Porcupine. They squatted along the walks, with their stolid faces, and seemed to resent being beamed on by benevolent tourists who beamed as if they knew just how it felt to be an Indian.

FUR IS KING AT FORT YUKON

The mining pick has had little to do with the prosperity of Fort Yukon. It is the oldest English-speaking settlement on the river; and, since Alexander Hunter Murray, of the Hudson's Bay Company, founded it in 1847, fur has been its king. Its supplies were once transported more

Photograph by Amos Burg

ALMOST EVERY YUKON CABIN HAS A CACHE TO HOLD DRIED FISH AND SUPPLIES

Tin is nailed around the upper part of the posts to prevent wild animals from climbing them and gnawing through the floor.

than 4,000 miles from York Factory, on Hudson Bay, and more than three years were spent in making the trip. At this camp we had our only sleep above the Arctic Circle.

A strong wind swooping upriver, ripping our tent, urged us to start our 1,000-mile westward trek for St. Michael. This wind, blowing against the currents sweeping out of the lower mouth of the Porcupine and the Chandalar, put us in heavy breakers; but wherever possible, especially on the shallow bars, we hugged the shore. At noon we crouched miserably beneath dripping willow trees and ate a box of cereal with condensed milk.

That night we camped on an island 50 miles below Fort Yukon, with a high wind pushing down the moss-rooted trees. Below Windy Island camp the river was calm; but low over the water was a mist resembling a mirage, which gave a dismal aspect to the landscape and kept our feet cold. Broken fish wheels and swamped boats at two fish camps we passed testified that the late storm had been most violent.

At Beaver, 52 miles below Fort Yukon, we received our first hospitality from a native, a Point Barrow Eskimo woman. Her people had come here from the north with a generous Japanese trader, after he had married one of their women.

"SPOKE" GROWS SUSPICIOUS

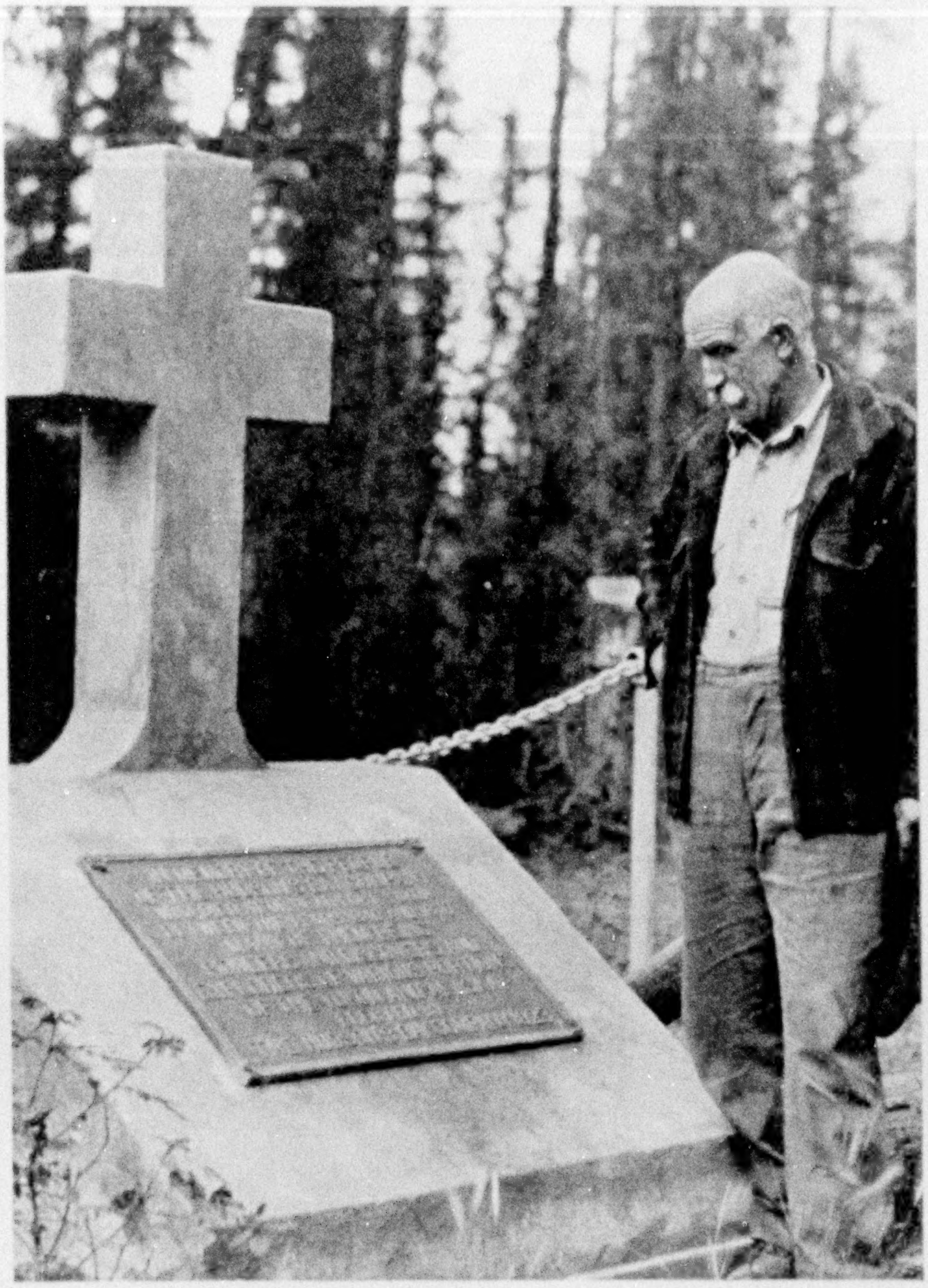
We hadn't hitherto encountered the fine hospitality that characterizes the Eskimo; so when the woman gave us two heads of lettuce and an ample slice of salmon, Spoke grew suspicious. He set off uptown to solve the problem and presently returned with a knowing nod. "That woman has two daughters just our age, whom she has been trying to marry off," he explained. We sniffed the joker!

Next morning, as we drifted past the village, the Japanese trader's relations were busy mending boats and repairing fish traps, showing the energy that distinguishes them from the rather indifferent activity of the Indian. In early days Eskimos were sought as river crews, be-

cause they are good workers.

Below Stevens village we left the flatlands and entered the well-defined gates of the Lower Ramparts. Here the river is funneled between brown rolling ranges formed by a series of closely connected peaks.

About Rampart Rapid we found fish wheels more numerous, because of the swifter current of the river. We coasted down over a growling reef at twilight, with the smoke from the white-tented fish camps giving the whole scene a romantic atmosphere. An 8-hour run below here, the river leaves its confinement to enter more open reaches below the mouth of the Tanana, its largest tributary wholly within Alaska.



Photograph by Amos Burg

THE HUDSON'S BAY MEMORIAL AT FORT YUKON

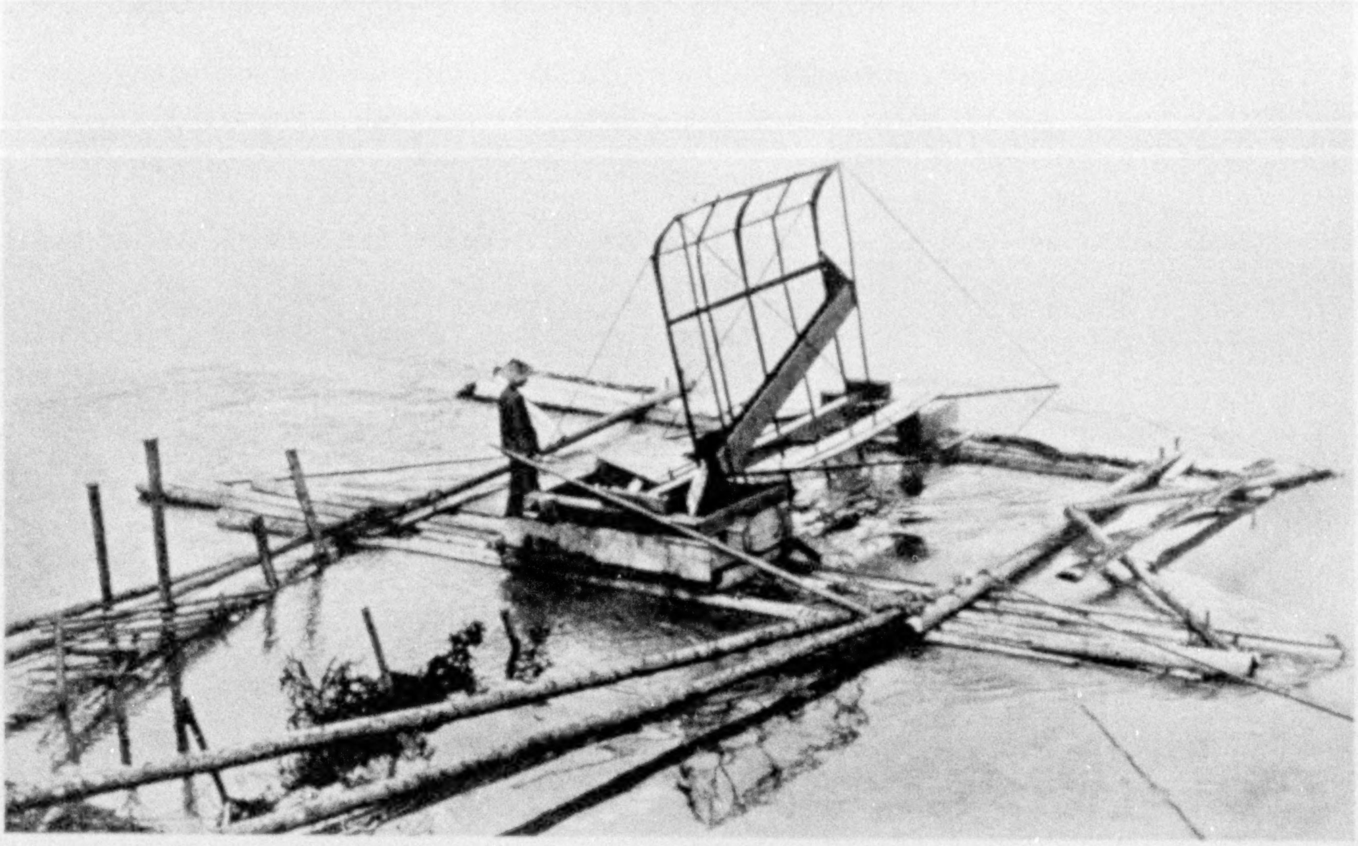
This was the farthest flung of all the great company's trading posts, and the site of the oldest English-speaking settlement on the Yukon (see, also, text, page 113). Fur is still king here, Fort Yukon being the most important fur mart in Alaska.

At first Tanana made an impressive appearance. Then we found the impressiveness came only from red-roofed buildings of abandoned barracks—old Fort Gibbon, at the lower end of town. A dilapidated row of shanties forms the Indian village of St. James Mission, two miles above. Tanana is near the site of Nuklukayet, once neutral ground for the British and Russian traders with the Indians, and later the farthest inland post of the Alaska Commercial Company.

Downstream from Tanana the river widens to such an extent that it seemed to put us out of touch with the shores. Spoke amused himself when he wasn't at the oars by reading the home newspapers wrapped around the jelly jars we had received at Tanana. When we passed two fish wheels close together we would each select one and see who could catch the most fish as long as we were in sight of them.

RUBY TURNS ITS BACK ON THE RIVER

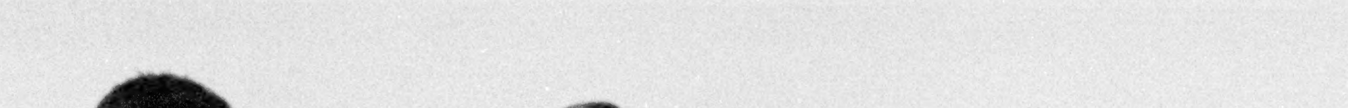
Late in the afternoon we stopped to interview an old Indian living on the bank in a mud-smeared tent and keeping two fish wheels running. He had a humorous slant on life and a knack for slang. He had cleaned 120 silver salmon since morning, he said, and was working for a mining grubstake. Unlike most Indians, he dried his fish well, so that they would keep for several years.



Photograph by Grafton Burke

A FISH WHEEL IN THE YUKON FLATS

This current-driven device was invented during the Fairbanks stampede and was soon adopted by natives and whites on the Yukon and its glacial tributaries. It is ineffective in clear water, where salmon can see to avoid its scoop.



Photograph by Amos Burg

SMILES GROW BROADER AS THE ESKIMO AREA BEYOND ANVIK IS REACHED

The boy in the black shirt is Matt, from Russian Mission. He took the two adventurers down the river in his boat to Marshall, after *Song o' the Winds* was lost in a storm (see page 121). The other boys run the mail launch from Russian Mission to the Kuskokwim, where they make their home. The lower Yukon and Bering Sea native, a mixture of the far-northern Eskimo and the interior Indian, is small, rugged, and full of vitality.

Photograph from Amos Burg

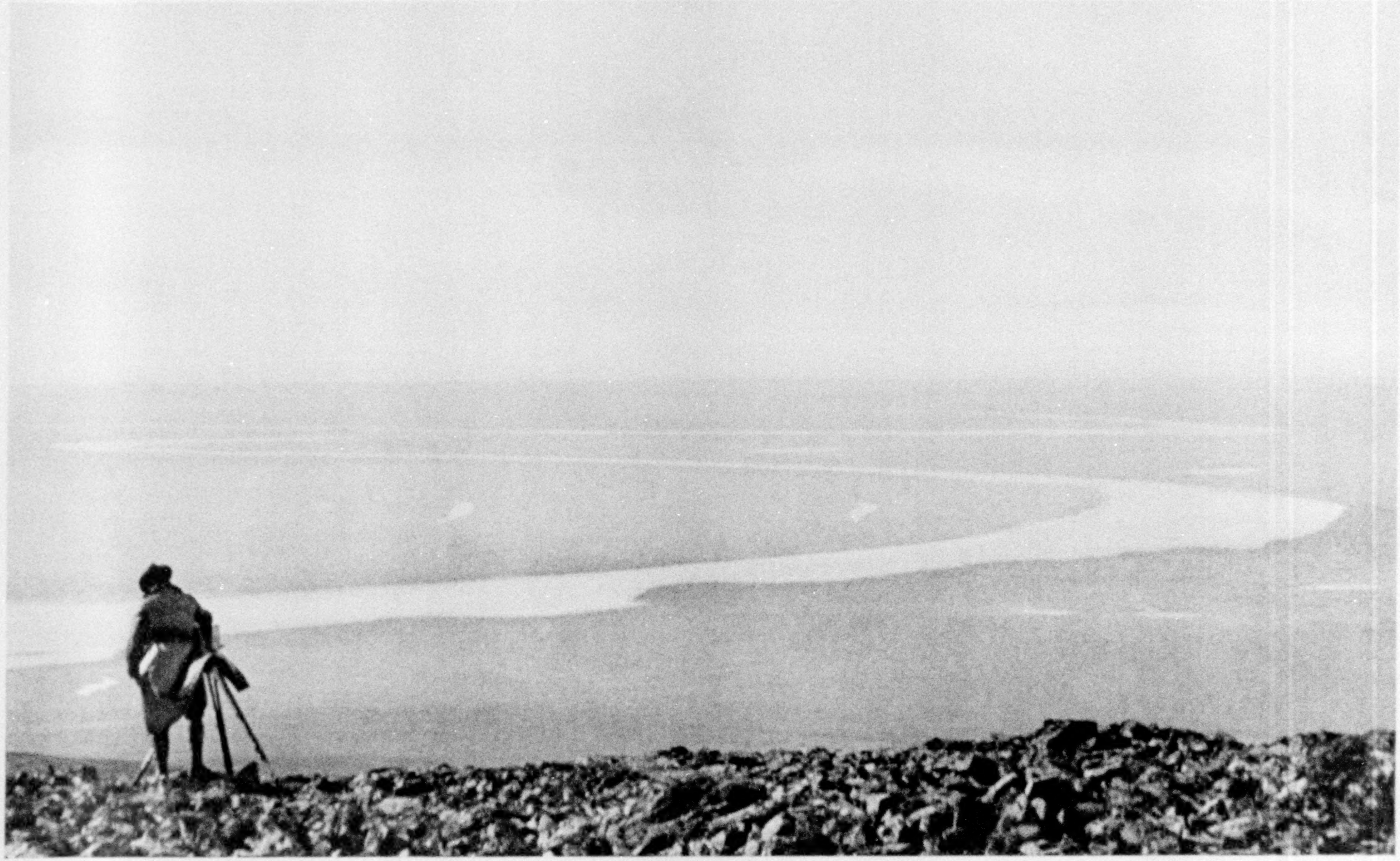
BAKE DAY AT HOLY CROSS MISSION

Forty-five pans of bread are baked at one time and three bakings a week are required to feed the growing native children. Most of the work is done by the children themselves, under supervision of the Jesuit Fathers.

Photograph by Amos Burg

BELLES OF THE YUKON

At Anvik the Eskimo begins to mix with the interior Indian, and a modification of language and customs follows (see text, page 122). The natives of this region are generally honest and timid, rarely provoke a quarrel, and usually take what is offered them for their produce and labor. They are not jealous of possessions, have a great capacity for generosity, and divide their last fish, flour, or tea with anyone not so fortunate.



Photograph by Amos Burg

THE YUKON SPRAWLS INTO MANY CHANNELS NEAR THE SEA

"Spoke" gazes to the westward from mountains below Marshall at the mighty Yukon snaking out across the tundra before it empties through its numerous tributaries into Bering Sea.

Photograph from Amos Burg

THE ICE BEGINS TO MAKE IN THE YUKON

The author's greatest apprehension, outside of the high winds on the lower open reaches of the Yukon, was that he and his companion would be jammed in the fall ice before they reached St. Michael. The most interesting time on the river is in the spring, when the ice in the upper river breaks, and the boats push down behind it, moving along as fast as possible. The town on the right is Ruby, which turns its back on the river (see, also, text, page 120).

Photograph by Amos Burg

THE "YUKON" SHOVES A BARGELOAD OF ORE DOWNSTREAM THROUGH THE YUKON FLATLANDS

More than 8,000 tons of ore and concentrates are handled from the Mayo lead-silver mine, on Stewart River, by the White Pass Railway during the open season of navigation every summer. The bulk of it goes out by way of Skagway, while some is barged downstream to the Tanana River, where it goes out by way of Nenana (see, also, text, page 105). The *Yukon* is the only boat on the Yukon operating between Dawson and Tanana, 700 miles.

Scudding before a fresh northeast wind, we landed next day at the mining town of Ruby, about 170 miles below Tanana. I have never seen another such dilapidated town. Its buildings, huddling together on miry streets, their backs pointing to the river, give the town a squalid aspect. This is an unsuccessful departure from the Yukon tradition of having the first row of cabins facing the river. Ruby's population dwindled with the exhaustion of the placers on Long Creek (see page 119).

The bank was so muddy that there was no place to pitch our tent, so a woodchopper living in a houseboat took us in as guests. He knew what it was, he said, to be short on change and hungry, because only three months before he had come floating into Ruby from Fairbanks on two logs, with a nickel in his pocket!

The water front echoed to a dog chorus as the steamer *Alice*, pushing a barge, steamed in from Nenana, bound for Holy Cross. Spoke and I went down and helped hustle freight, so we could make films of steamboat traffic on the river.

NULATO, OLDEST SETTLEMENT ON THE YUKON

Later, with our canoe now on the *Alice*, we passed the bold, solitary bluff of Bishop Mountain, rising from desolate Koyukuk flats. Twelve miles below, at the mouth of the Koyukuk River, we turned south-southwest, on the last great loop of the Yukon before it spills through its many distributaries into Bering Sea.

Tumbling out of bunks to work freight at Nulato, we saw the oldest settlement on the Yukon. A fort and trading post were built here in 1838 by the half-breed Malakoff, who ascended the Yukon from St. Michael, in the employ of the Russian Fur Company.

Nulato still carries the bloody stain of that massacre by Koyukuks in 1851, in which about 100 Indians of another tribe

Photograph by Amos Burg

"SONG O' THE WINDS" IS BATTERED BEYOND REPAIR

The force of the waves pounded the deckwork of the craft to pieces when it floated ashore after being swept off the beach by a raging storm at Russian Mission. The remains were given to Matt (see illustrations, pages 116 and 125) and left on the beach.

Photograph from Amos Burg

BIG CUCUMBERS ARE THE RULE AT HOLY CROSS MISSION

To prevent these two-and-a-half-feet specimens from breaking off the vines, it is necessary to tie them in small sacks. This mission is one of the most prosperous on the Yukon, with a great extent of cultivated ground on which everything possible is grown for the needs of the school. The village is the transfer point for the Iditarod gold fields.

Photograph by Amos Burg

NATIVE MOTHERS CODDLE THEIR CHILDREN

The lower Yukon natives do not compel their offspring to obey. The children have no regular tasks to perform, for nothing is ever done unless necessity demands it. They are never chastised or corrected, but are given everything they ask or cry for, even to the ornate family clock over the mantel. The teacher at one of the villages asked a native father why his son did not attend school. "Oh, he say he no feel like it," the father replied.

and several whites were slain. First, a native village near by was fired, and Indians who tried to escape were shot running from the flames. Then the Koyukuks crept on to the post.

At Anvik, 190 miles below Nulato, coast Eskimos begin to mix with interior Indians, and a modification of language and customs follows. Here people are fish eaters, as are all the natives down to Bering Sea. Their menu is varied by little else than the spring and autumn waterfowl.

Here scenery was not varied: Indian or white fish-camps, with their groaning wheels, at wide intervals, and an occasional woodpile awaiting the steamer were all that changed the regular aspect of the river.

After we had helped pile 170 tons of freight on the beach at Holy Cross for the mission there and the mines on the Iditarod, the *Alice* sailed away. We were left on the beach, again to embark in *Song o' the Winds.* Spoke, as he again juggled a bannock, regretted that the *Alice* could not leave its galley and Chinese cook with us.

September dawned with white mists on the Yukon and snow capped peaks standing away to the east, cold but inspiring. Our descent was marked now by squalls. Driving rain and a widening river threatened our control of the canoe. Open reaches presented vistas like inland seas. On shallow weather shores, in nasty squalls, it was bad going, with seas slopping over the gunwales. Where possible, we ran down the more sheltered side channels to avoid the wind. Below Paimiut the scenery became magnificent, with rugged, barren, cloud-capped mountains rising from the right shore.

In late afternoon we reached Russian Mission (Ikogmut). Here the triple cross of the Russian Church rises behind tents and smokehouses that border the beach. It is the sole surviving witness to the rule of the tsars on the Yukon. A score of

Photograph by Amos Burg

SCHOOL CHILDREN OF THE LOWER YUKON

dogs staked on the beach, their eyes swollen by mosquito bites, howled as they burrowed into the mud for relief.

We camped just above the town and were instantly besieged by two coughing, spitting natives in kayaks, anxious to sell us fish. We bought their grayling to be rid of them. Tuberculosis is common to all these natives; but living in tents and looking for food out of doors help them to combat this disease.

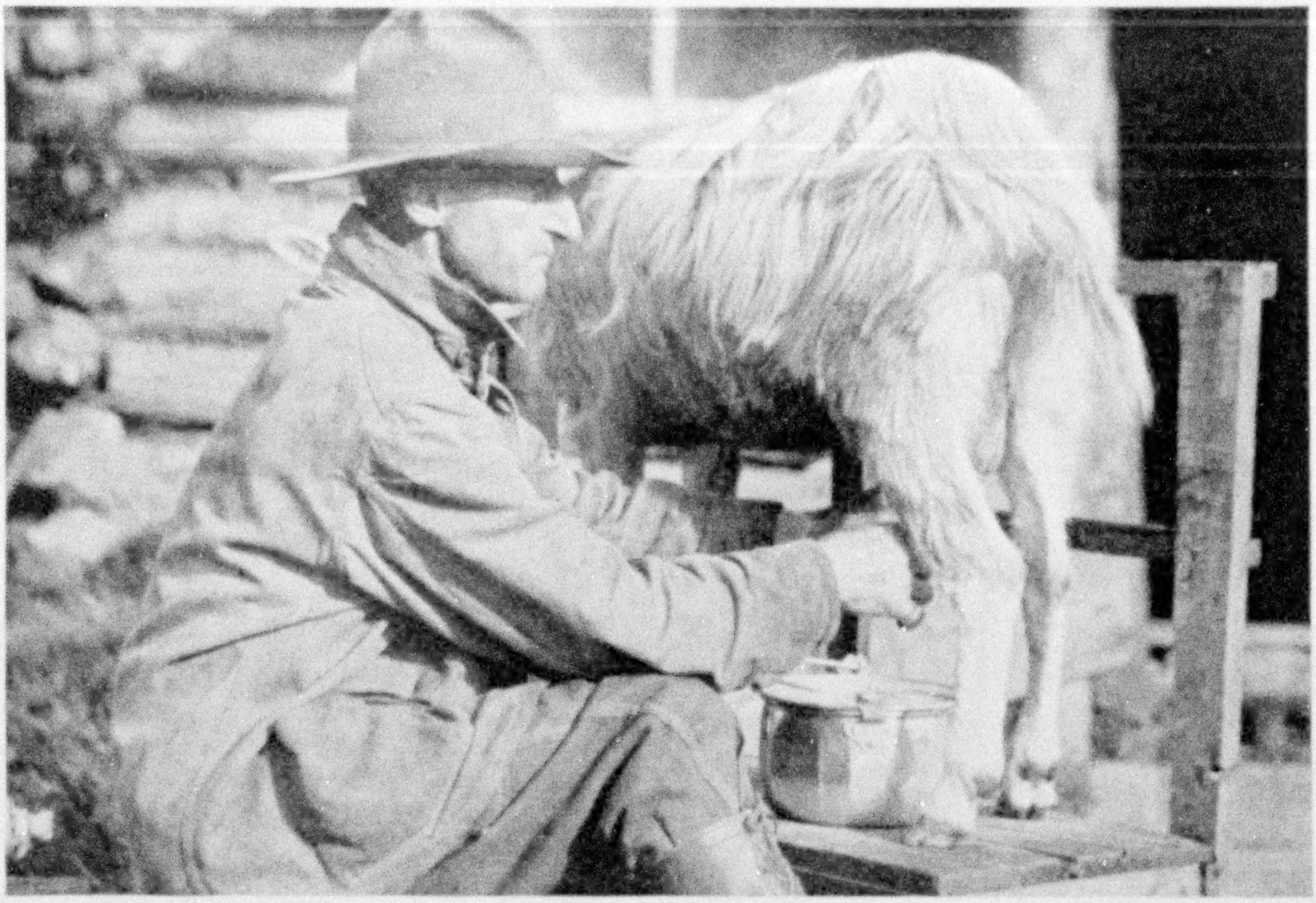
MATT, THE SOCIAL LION OF THE YUKON

A raging upstream wind with heavy rain soon drove us into a cabin. The storm-lashed river roared like an angry sea. On the evening of the third day a native boy shouted excitedly into our cabin, "Kayak!" Spoke and I raced for the river in time to see *Song o' the Winds* capsize in the middle of the stream and disappear in mountainous breakers. The storm had rolled our craft 200 feet down the bank and fed it to the hungry Yukon.

Left without means of transportation, we hired a native boy to take us down the river to Marshall. Matt owned the only outboard motor in the village. Fearing this outboard motor artist might develop a temperamental streak, we followed him around, humoring his every whim.

Matt, with the customary native foresight, left the village on our trip clothed in a blue cotton shirt that was soon soaked in the steady rain. Despite this carelessness in the proper dress for each occasion, Matt was a social lion on the river and an admirable person with whom to travel. The complicated relationship that exists between these natives had given him some blood connection in every village for three or four hundred miles. We would no sooner heave in sight of a village than Matt would announce that we were to have tea at his uncle's tent. One is welcome among these people at any time or place, and the farther the traveler has come the more welcome he is.

Matt had a mouth harp, on which he reeled off waltzes as the motor putted down the river. The older natives had no music except the big drums used at their dances, but the present generation is musically inclined and can play several



Photograph by Amos Burg

THE MARSHALL POSTMASTER MILKS HIS DIMINUTIVE "COW"

About 20 head of Toggenburg milch goats have recently been imported into the lower Yukon country by white settlers, perhaps with the idea of letting them graze with reindeer or of having a few goats in each native village to produce milk for babies and for tubercular adults.

instruments by ear, principally the mouth organ, guitar, and accordion. A child with no knowledge of reading can pick his favorite phonograph records out from hundreds of others.

Matt told me the reason he had a motor was "to get to places fast." One would think, to hear the number of outboard motors that purr on the river, that every native is in a hurry to get somewhere. He will race to one place, stop a few moments, then, turning around, will speed right back, doing nothing at either end of his journey. But the motors aren't good investments for the native, because of upkeep and his natural inability to run them intelligently and efficiently.

Although time seems to mean nothing here, every house has two clocks, sometimes more. One of these is usually an ornate affair, with cuckoo chimes, and occupies an important position over the cookstove. In a village of 25 dwellings, one may find many different kinds of time.

We found fish wheels still operating, rounding off the summer's fishing. When the season begins, about June 15, just after the ice breaks and the salmon begin to run, the natives travel in large numbers from the winter or hunting villages to the summer or fishing villages. One summer village usually comprises the inhabitants of three or four winter villages. Natives fish all along the various mouths of the Yukon; but they do not have gear strong enough to fish out in salt water, where the catch would be larger. Many do not keep what little gear they do possess in shape to catch the first run of salmon; they waste too much time trying to get their motors started.

At the fishing village, all hands work faithfully for the first week or ten days. During this time the young men will have tinkered their motors into starting. They will then spend the summer running up and down the river, visiting from one fish camp to another, while old men, women, and children catch a few of the many thousand salmon that annually run upstream. When the fishing season ends, about August 1, a family may have three

Photograph by Amos Burg

MATT READS "SPOKE'S" FORTUNE IN TEA LEAVES

There are no social groups among the natives. A traveler is welcome at any time or place, and the farther he has come the more hospitality is shown him (see, also, text, page 123). Matt was the only native in the village who owned an outboard motor.

or four hundred pounds of poorly cured fish with which to pay the trader for gas used in the joyriding motor boat!

Besides this, they may have two or three straw bags or boxes filled with edible dry king salmon—in all not more than 500 pounds for their summer's labors. They do not put up enough salmon to feed their dogs during the winter, but must depend upon the lamprey run and upon fish caught through the ice.

The natives had little curiosity about where we had come from or where we were going; usually our only visitors when we made camp were three or four of Matt's uncles. These people think a white man can do anything, because he can get it out of books.

At Akahamut, Matt took aboard a dog and a hunchback boy for companions. On account of a high wind, we were unable to depart before noon. I feared, with all our tea engagements with Matt's uncles, we should not be able to reach Marshall by evening, but Matt assured me we would. One of his uncles was giving a dance for him there and he would have to be present.

With a squall sweeping toward us, we headed down a long slough, and then into the river, which opened up like a vast sea. A string of breakers struck us abeam. Spoke, the hunchback, and the dog burrowed under the canvas. I steered while Matt bailed out the water that squirted in between the planks, which were working almost like an accordion. When we reached another slough that led into Marshall, I felt more comfortable.

Matt stayed with us all night, in a little cabin at Marshall, with plans for an early start home next day; but he fell asleep reading a comic paper, and awoke next morning with the idea of finishing it so fresh in his mind that it startled us. He read an hour and a half and drank six cups of coffee; so it was late afternoon before he stemmed the river current for home.

Marshall, founded in 1913, when gold was discovered on Wilson Creek, is the last gold city on the Yukon. It was here we saw a wise old native listening in on the American presidential election returns, coming in over a radio in the schoolhouse.

Photograph by Harry Anthony

WINTER MOTIVE POWER ON THE AMERICAN YUKON

It was so much Greek to him, but he preserved an interested demeanor and occasionally nodded his head, as though agreeing with the loud-speaker.

Next day he was in one of the local trading stores with a pair of glasses on his nose and with a paper of last year's vintage turned upside down, apparently reading to the younger natives. There were great times outside, he said. Two big men, Mr. Hoover and Mr. Smith, were running for a big white house. Mr. Smith was the nearest to the big white house, but there were lots of people helping Mr. Hoover to run.

After trying unsuccessfully to charter another boat, Spoke and I shipped as deckhands aboard the Northern Commercial Company boat *Ensee* for St. Michael. The ever-widening river carried us past the last of the spruce trees that had started with us on far-away Bennett. The delta country became covered with dense tundra moss, from which sprang a scrubby willow brush.

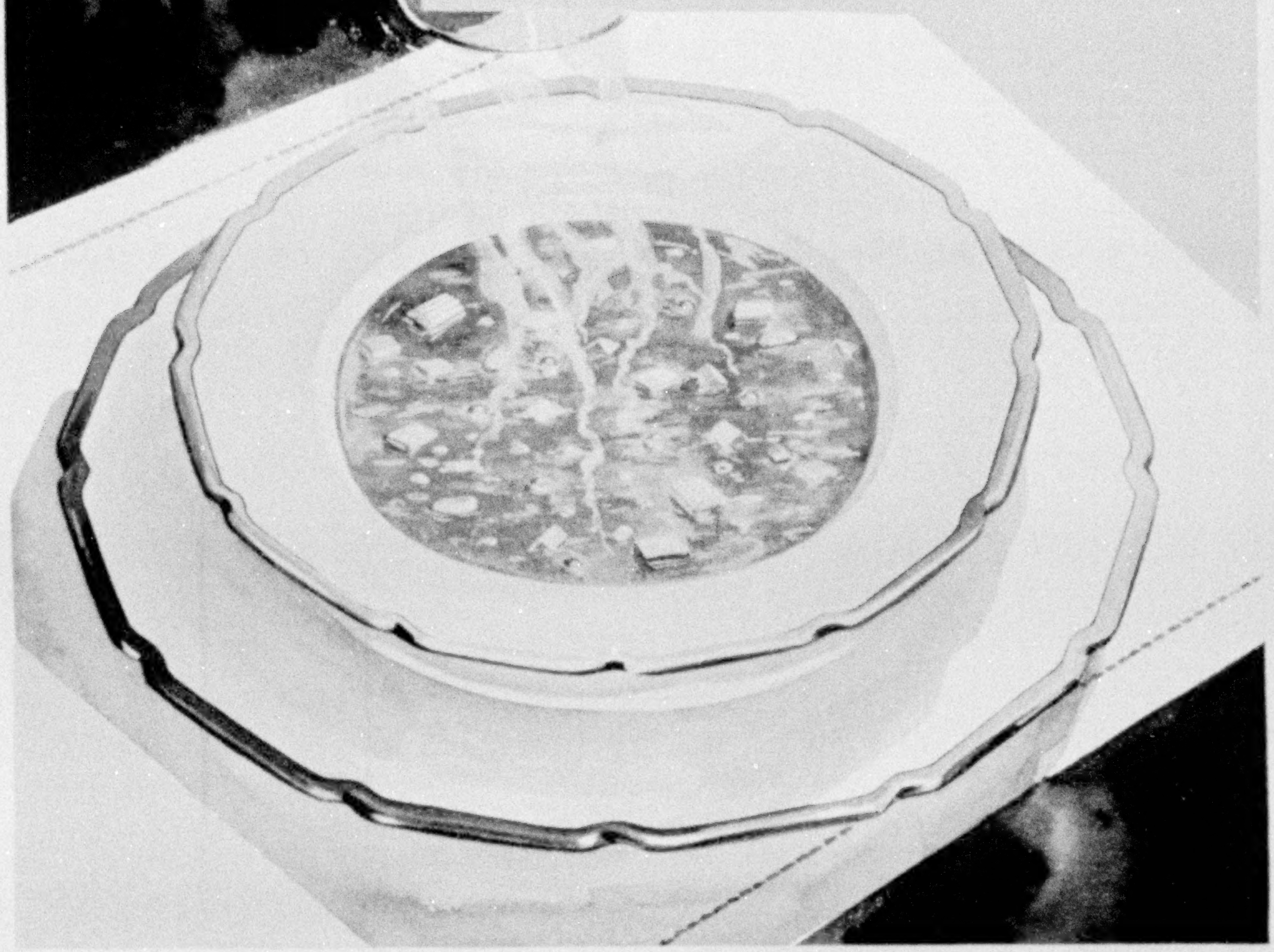
At Andreafski (which dates back to 1853) we felt the lift of the tide 120 miles from the sea and watched the last of the hills fall away from the Yukon. Here, in 1855, a whole village was destroyed by Russians from St. Michael, to avenge the death of two traders killed by natives. We saw here our last boneyard of ships on the Yukon, for this was their great wintering place on the lower river.

The Yukon narrowed, as we ran into its sloughlike Apoon mouth. At Old Hamilton an Eskimo schooner was anchored, and some dogs were staked in the mud. By sunset we ran out of this dismal mouth to rest on a bar and await high tide in Pastol Bay.

So this was Bering Sea—this angry tumult of mud that our propeller stirred up at midnight when we plowed through a bar! We set our course up past Point Romanof for St. Michael.

Rounding the passage between Stuart and St. Michaels islands at dawn, we saw, strewing the desolate beach, the last remnants of a faded régime that had spanned almost a century. A Russian blockhouse facing seaward, with its rusted iron cannon, was the beginning; a broken, weary fleet of magnificent river packets that once stemmed the currents to the far reaches of the Yukon was the end. The "Trail of '98" is gone, and Time turns his pages to write a new chapter.

Soup belongs in the healthful summer diet!



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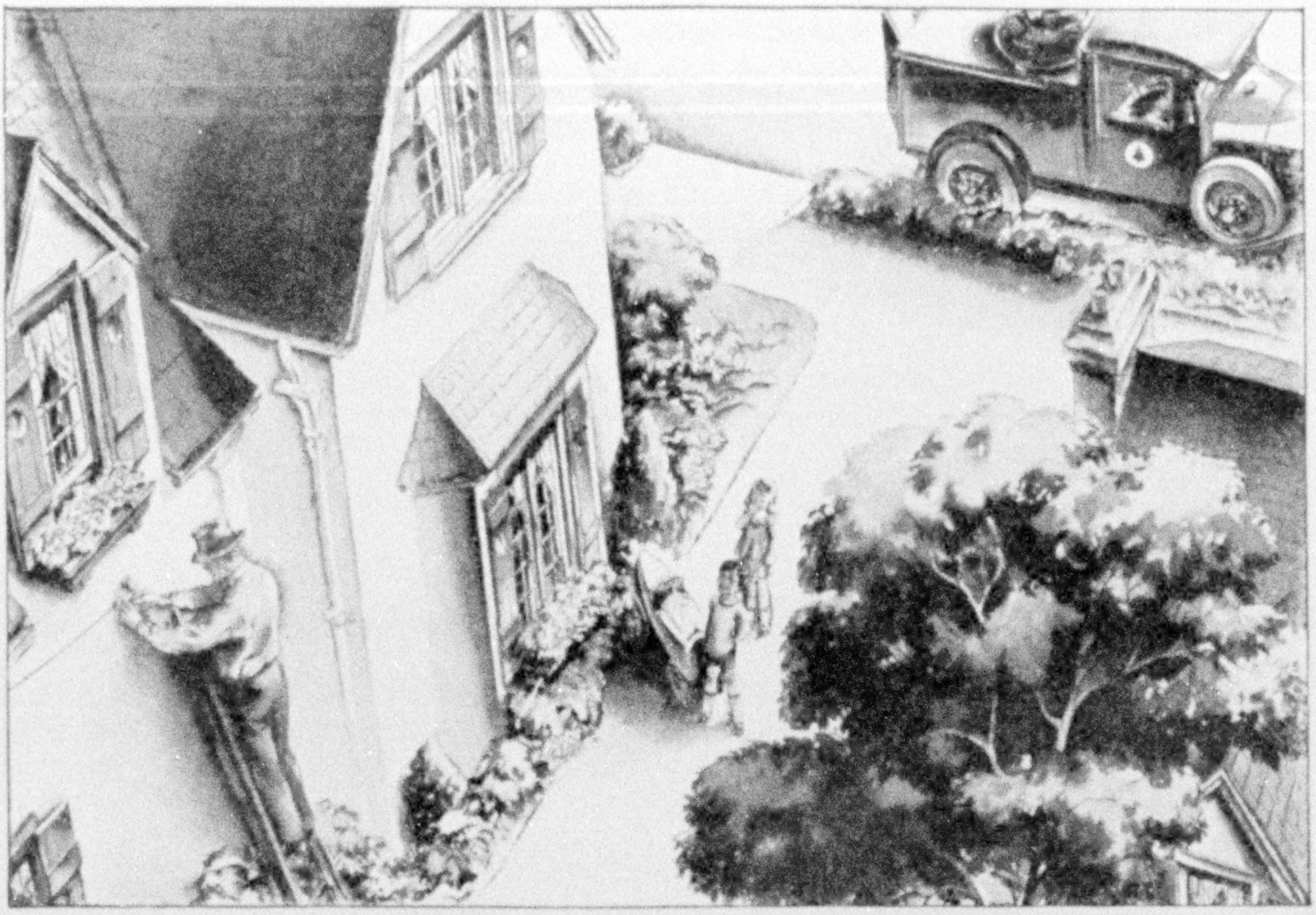


THE BELL TELEPHONE SYSTEM IS ORGANIZED TO GIVE CONSTANTLY IMPROVED SERVICE . . .
QUICK, ACCURATE, EASY TO USE

What you want of the telephone . . . it is our business to give

An Advertisement of the American Telephone and Telegraph Company

WHEN you order a telephone, you want it put in promptly. During the last five years the average length of time needed to have a telephone installed has been cut nearly in half.

You want quick and accurate service, free from trouble. Good as the service was five years ago, today there are a third less troubles per telephone. During this same period there have been marked increases in the already high percentage of perfectly transmitted conversations.

When you make a toll call, you want a prompt, clear connection. Five years ago 70 per cent of all toll and long distance calls were handled while the calling person remained at the telephone. To-day all but a very small per cent are handled this way.

The Bell System is organized to give constantly improved service. Several thousand persons in the Bell Laboratories are engaged in research that improves the material means of telephony. The Western Electric Company, with plants at Chicago, Kearny, N. J., and Baltimore, specializes in the manufacture of precision telephone equipment of the highest quality. From its warehouses all over the country, it supplies the millions of delicate parts for Bell System apparatus.

The operation of the System is carried on by 24 Associated Companies, each attuned to the area it serves. The staff of the American Telephone and Telegraph Company is continually developing better methods for the use of these operating companies.

Your telephone service today is better than ever before. The organized effort of the Bell System is directed toward making it even better tomorrow.

WHY FAMOUS MEN OF THE DAY USE BARBASOL

** "Barbasol makes each day's shave a 'Birdie.' It strokes well under par for the facial course every time; quick, clean, easy — and never in the 'rough.' Every face is a fairway when this modern and different shaving cream softens the beard. And I like to play around without having to get up a lather; no rubbing—no brush. It's the Champion of all the shaves."*

Craig Wood

** Barbasol testimonials are not paid for.*

Craig Wood, golf's newest star, who is the present Hawaiian Open Champion, Oklahoma City Open Champion, and who recently added to his triumphs the conquest of Horton Smith in the Professional Golfers' Championship.

"For a perfect shaving score every day . . . Barbasol"

IF you haven't used Barbasol lately you're missing a lot, according to hundreds of letters which pour in telling about the wonders of this modern, different, *quick* shave. It must be sincere praise because this chorus of approval is *unsolicited.*

"And the beauty of it is, the razor doesn't pull," writes N. R. G., California. "Rather drive a car without a self-starter than go back to the old brush," says W. E. L., of New York. "No other to compare with this smooth, clean shave," rejoices M. W. in New Jersey. "Soft and smooth; no burning," writes J. T. K., of Missouri, and so it goes. (Names on request if you like.)

It's the easy, quick *simplicity* of Barbasol that makes millions of happy shaves. But *you've got to use it right.* Try it, men, THIS way and, if you follow these directions, *you'll be following the crowd:*

1 Wet your face. Leave it wet. **2** Spread on Barbasol. DON'T rub it in. **3** Wet a good blade and—Shave.

You'll think it's some kind of magic, the way the toughest beard is softened; the way the blade slips along—cuts crisp—no pull—no scraping—and leaves the face softened, refreshed. And DON'T FORGET, you get that kind of super-shave without lathering-up—no brush, no rub. And blades last longer, too.

It's easy to be a Barbasol believer. Try it in the morning and give your face a glad surprise. Generous tubes at all druggists', 35¢ and 65¢. The Barbasol Co., Indianapolis, Ind.

BARBASOL
SKIN FRESHENER

As a bracer for the face, there's nothing like Barbasol Skin Freshener. Slap it on face or neck; morning, noon, or night; for a quick "pick-up."

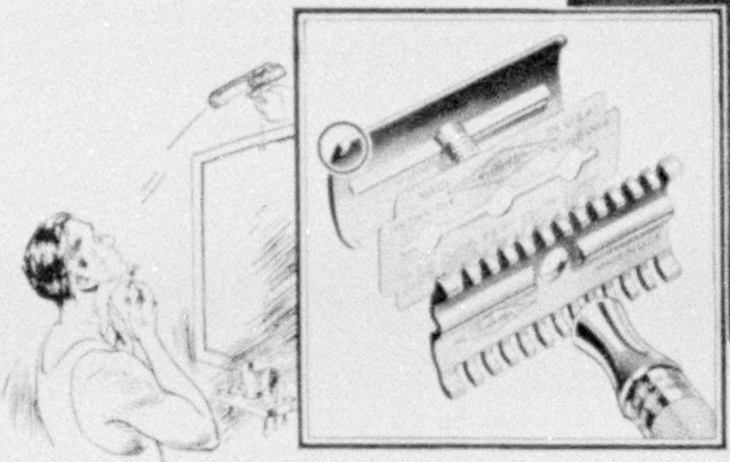
Barbasol

For Modern Shaving

No brushing — No lathering — No rubbing

Around this corner
lies new shaving comfort

Cut-out blade corners and reinforced razor corners banish "razor pull" forever in the New Gillette



MILLIONS OF MEN have freed themselves forever from "razor pull," thanks to this simple, but vital, change in the New Gillette Razor. The reinforced corners of the razor cap and the cut-out blade corners keep the blade in perfect alignment—eliminate "pull" formerly caused by nicked or dented razor corners.

The New Gillette also frees you from the most tedious part of shaving—taking the razor apart and drying the blade. The new blade resists rust. It needs no wiping; just rinse and shake dry.

In addition, the new shape guard teeth, channel guard, square blade ends and other equally important improvements—these bring you a new wealth of smoothness and speed. And they are all yours in the New Gillette Razor, in a handsome case with one new blade, for only a dollar.

On your way home, stop at your dealer's. Choose your New Gillette Razor set from any one of the five handsome new cases. And provide yourself with a supply of the New Gillette Blades—they're one dollar for ten and fifty cents for five, in the new green packet.

Also, a New De Luxe Razor and Blade

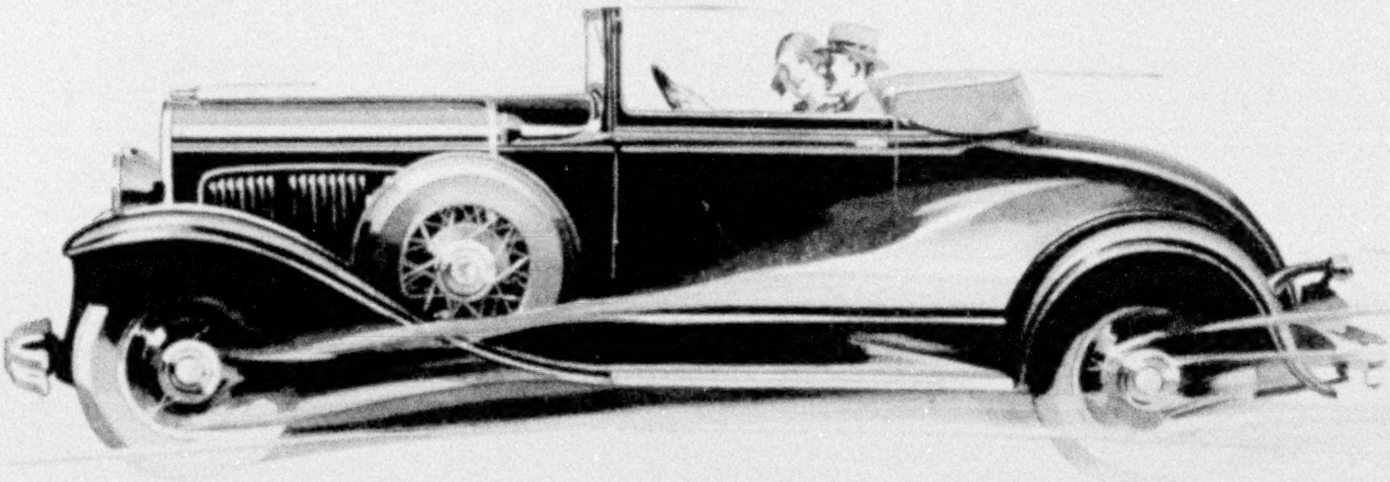
—for men who want maximum luxury in their shaving equipment. The Gillette New De Luxe Razor, in eight handsome styles, sells for $5.00 to $75.00 at the better shops. The Gillette New De Luxe Blades, of Patented Kro-man steel, cost $2.00 for ten.

Gillette Safety Razor Co., Boston, U. S. A.

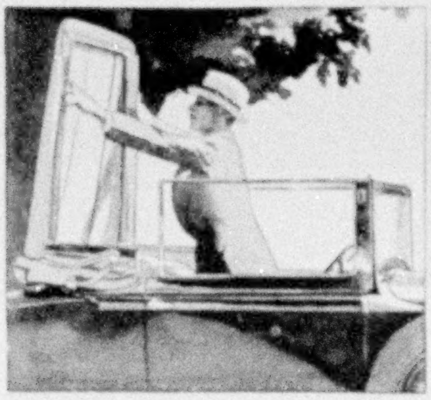
$1.00 *for ten; 50c for five. The New Gillette Blades in the new green packet*

The New Gillette Shave

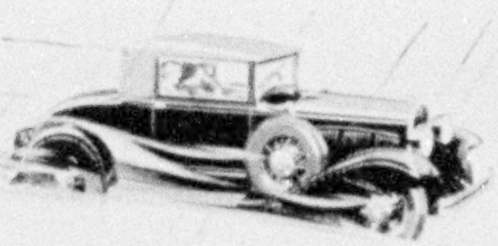
NEW
CHRYSLER SIX
CONVERTIBLE COUPE



$925
CONVERTIBLE COUPE
f. o. b. factory



The sky clouds over. Rain threatens Just reach back and quickly pull the top into place.



Now it's a Coupe—you can laugh at the rain and go merrily on your way—perfectly dry and comfortable.

A CONVERTIBLE COUPE model on the new Chrysler Six. Two cars in one at this amazingly low price. A rich, snug Coupe for days and nights when you want a closed car—or presto!—a smart, dashing open car for joyous driving in the sunshine. One person can make the change quickly anywhere, anytime. The top folds down easily when you want only the sky over you—and just as quickly is drawn back into place again for sudden changes in weather. Open or closed, it's a smart car—typically Chrysler in speed and smoothness.

. . .

NEW CHRYSLER SIX PRICES: *Business Coupe, $795; Royal Coupe, $835; Roadster, $835; Touring, $835; 4-Door Royal Sedan, 3-Window, $845; Convertible Coupe, $925. F.O.B. Factory (Special Equipment Extra).*

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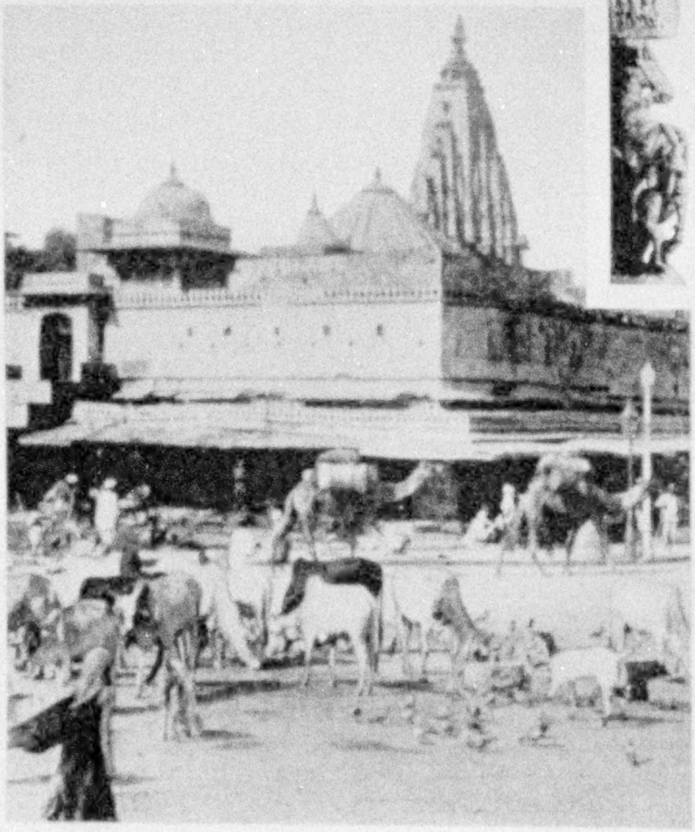

Jaipur's Broadway...and the Hawah Mahal

India

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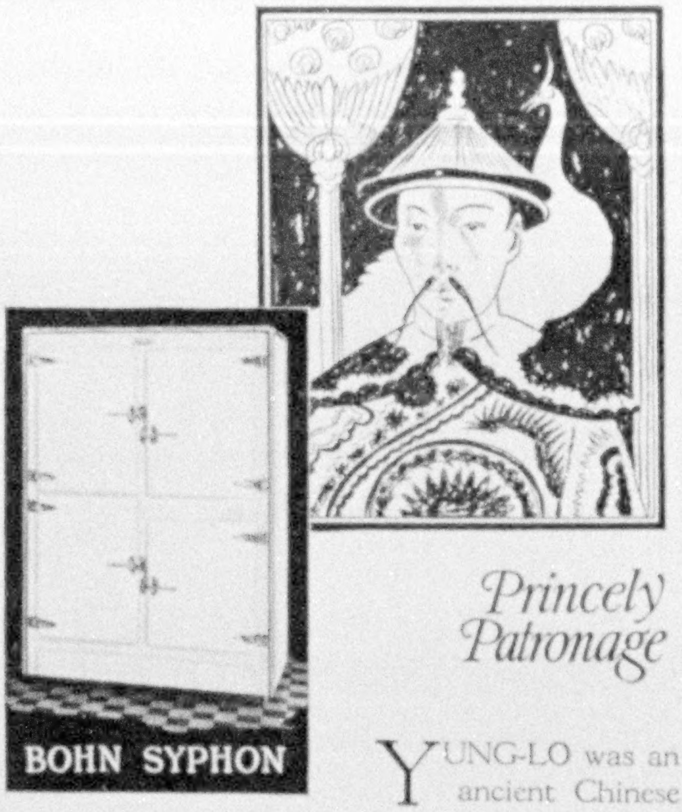

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Today when patronage has given way to enterprise and practical superiority, the BOHN REFRIGERATOR Co. stands pre-eminent as the manufacturer of porcelain exterior and interior finished refrigerators.

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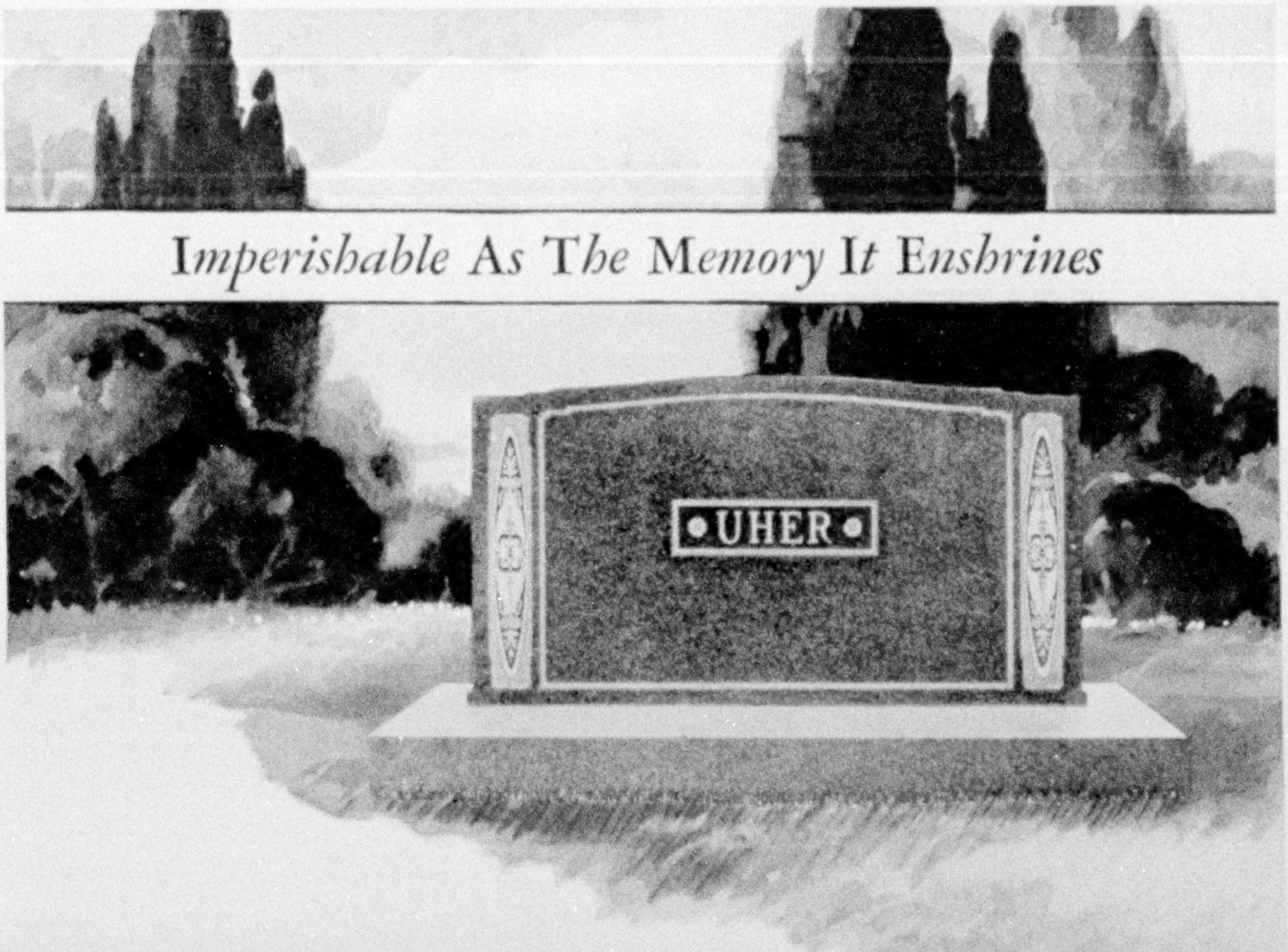

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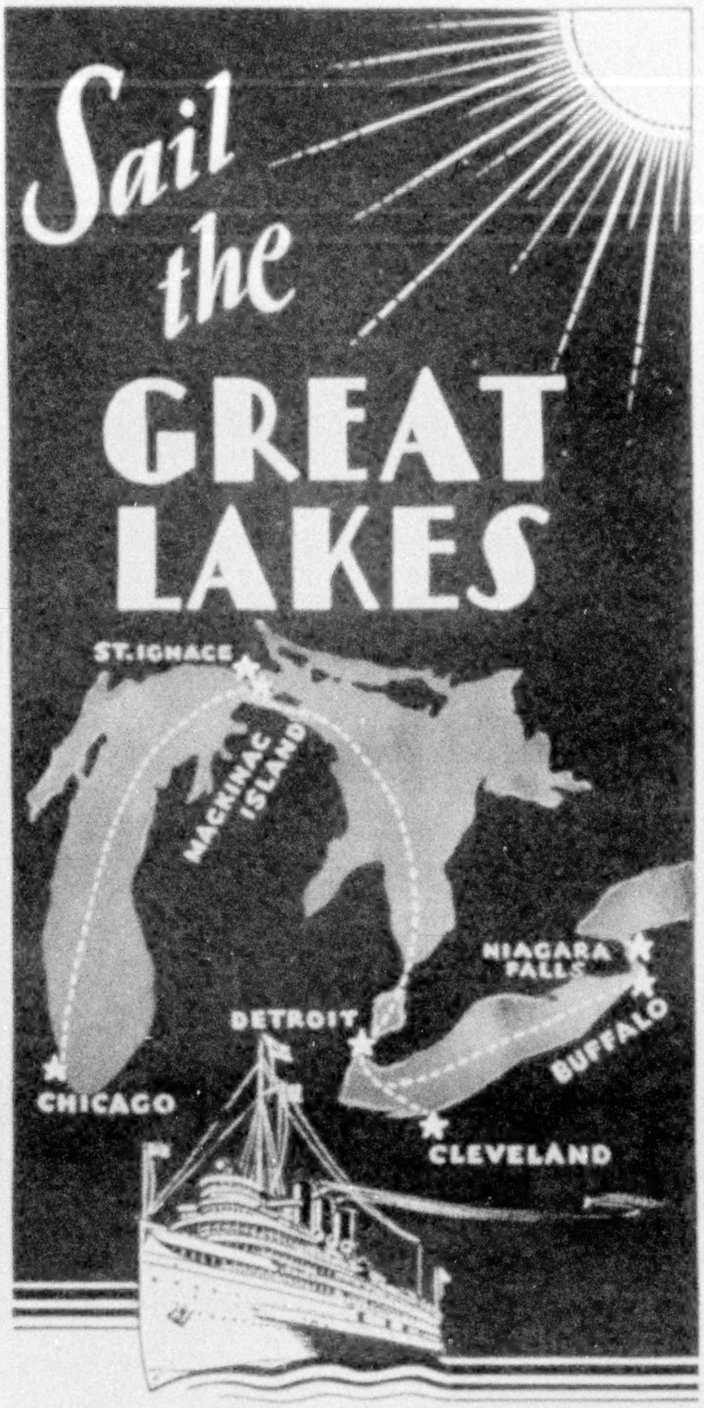

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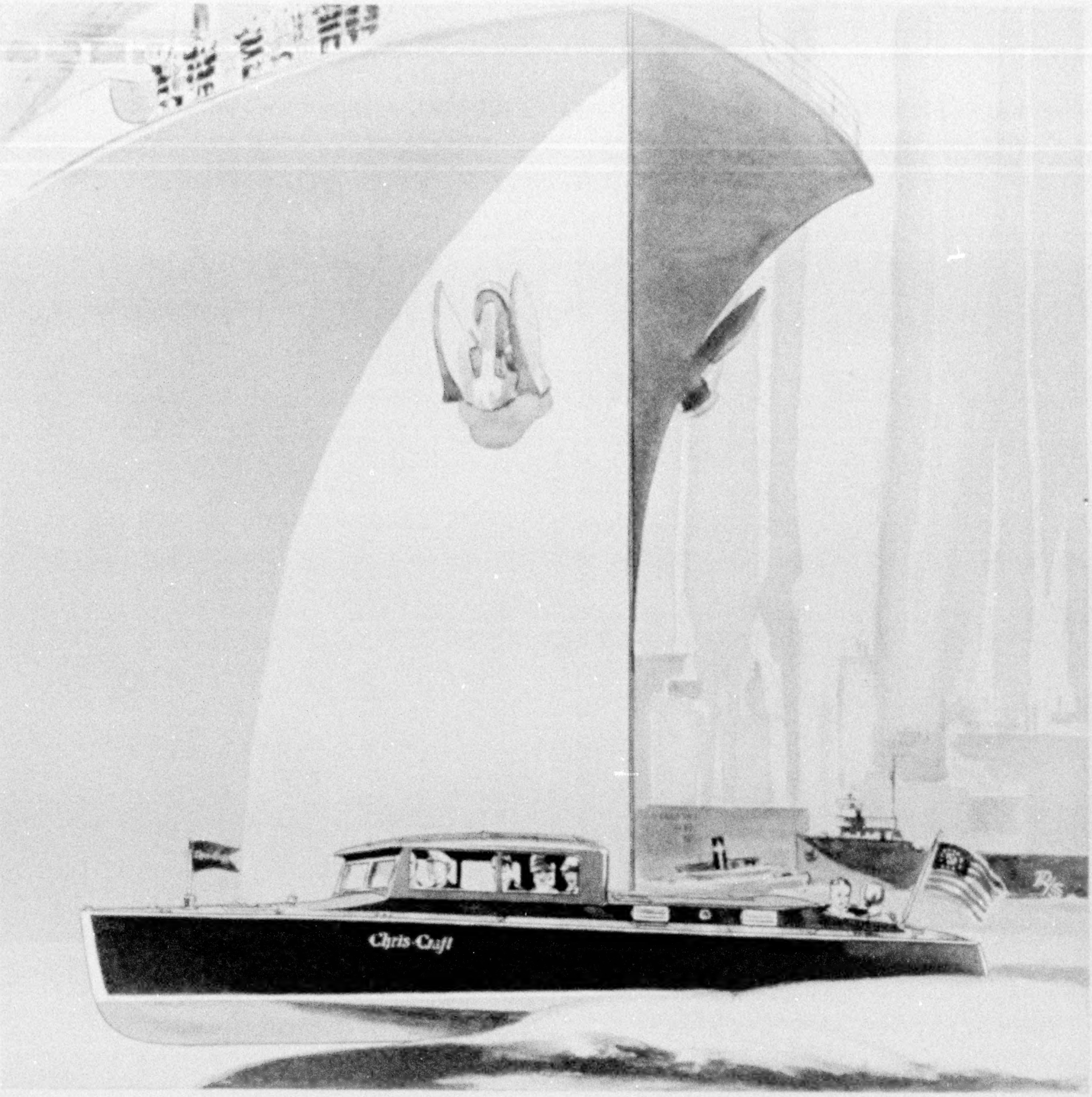

Chris-Craft 26-foot De Luxe Sedan, 250 H. P. Chris-Craft Marine Motor, Speed up to 43 M. P. H., $5600.

ACROSS the harbor, past giant liners, taking the wakes of excursion craft for fun—that's the life of favored ones who become Chris-Craft owners, for Chris-Craft is a real, big-water pleasure craft. It makes all weather boating weather, wherever there is open water ❧ ❧ ❧ This fine sedan will carry ample baggage for extended hunting, fishing or exploring trips. It is the ideal way to meet guests and to transport family and friends to and from waterside social affairs in deep cushioned, weather-protected luxury ❧ ❧ ❧ Fast and reliable as the train schedule. You just slip in and drive away as you drive an automobile. Starting, lighting, steering devices and instrument boards are like those of a motor car. A boy or girl can drive a Chris-Craft easily and safely ❧ ❧ ❧ Give your family the benefit of the best nature has to offer—get a Chris-Craft this year. New illustrated catalog, describing all models, may be had from Chris-Craft merchants throughout the world or by writing Chris Smith & Sons Boat Company, 767 Detroit Road, Algonac, Michigan.

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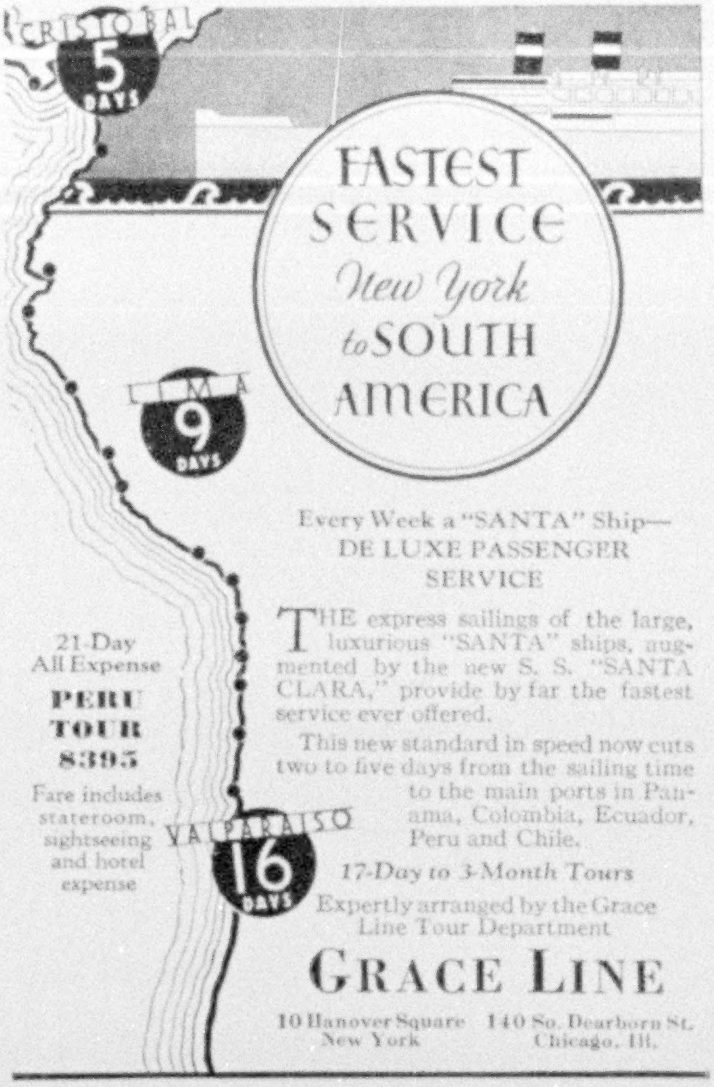

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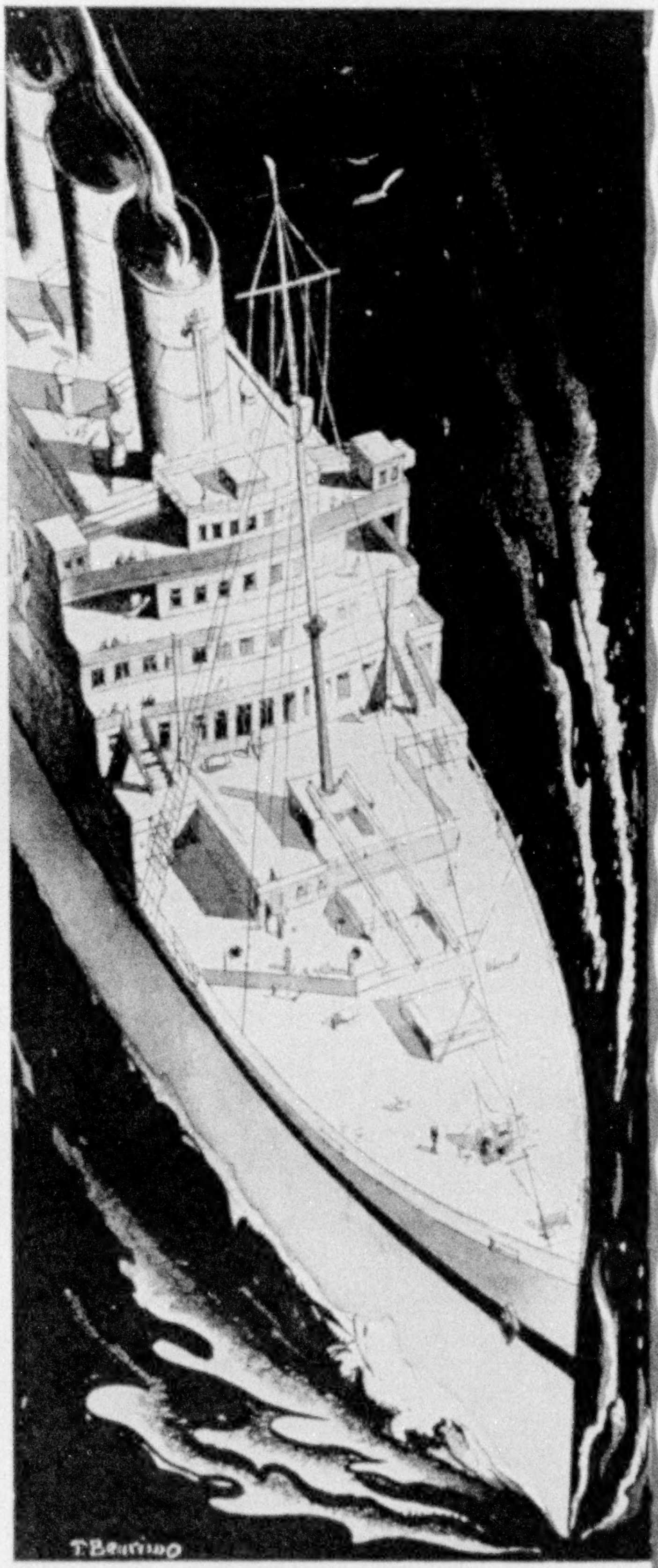

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Take a white Empress to the Orient . . . via Hawaii, the paradise route, or straight across to Japan on the Pacific speedway.

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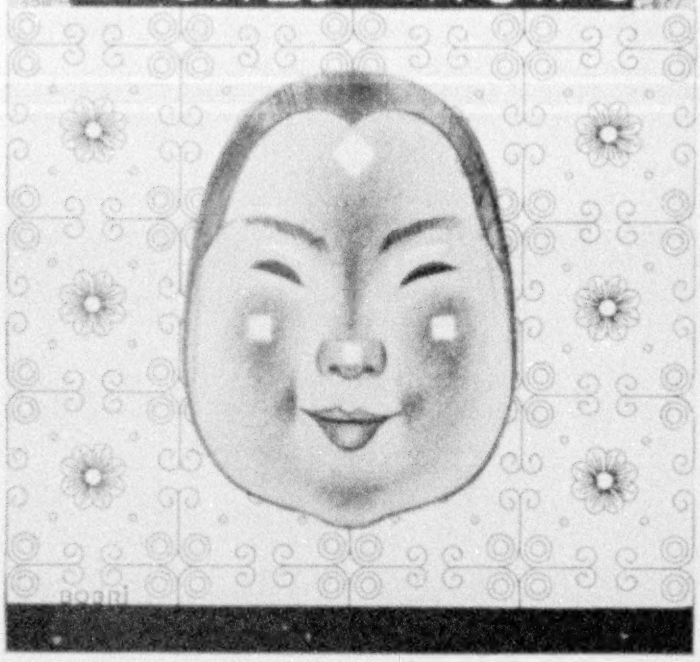
FRANCONIA 1931 WORLD CRUISE



The charm and personality of this World Cruise ship . . .

Charm and personality belong not only to enchanting people . . . a ship can possess them too . . . the Franconia does! . . . The inherent ability to please, to amuse, to fall in line with your every wish, be it a desire for the sophisticated pleasures of a luxurious club, or the health giving exercises of a perfect gymnasium and swimming pool.

The Franconia affords the most modern . . . the Utopian opportunity to sail the seven seas . . . to see the world. Yield to her lure . . . find new horizons . . . explore the secret, rose-coloured city of Petra . . . at Singapore cross over to Johore . . . see how a native prince lives in a gorgeous palace in Eastern splendor . . . treat yourself to some rare treasure in the Pettah at Colombo . . . thrill to gorgeous Bali . . . look over the Son of Heaven's fairy palace at Peking.

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Germs of decay are glued to teeth

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Film gets into crevices and remains. It clings so stubbornly that brushing alone cannot dislodge film completely.

Pepsodent was developed after years of laboratory study and experiment. The moment it touches your teeth you will notice the difference by the way it feels.

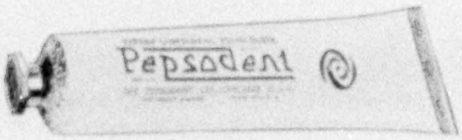
How Pepsodent removes germs

Pepsodent removes film with complete safety to enamel. No pumice, no harmful grit, no crude abrasive. But a creamy paste so gentle that it is recommended for children's teeth.

You will want to try it

We do not claim Pepsodent can "cure" decay or pyorrhea. Both conditions must be treated by your dentist. But we do say that Pepsodent is your best home protection. Simply send the coupon to the nearest address. Act at once.

Use Pepsodent twice a day. See your dentist at least twice a year.



Pepsodent, the tooth paste featured in the Amos 'n' Andy Radio Program

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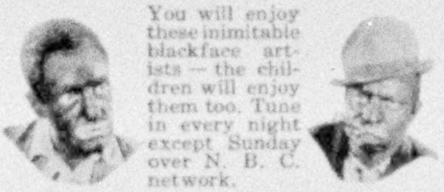

You will enjoy these inimitable blackface artists — the children will enjoy them too. Tune in every night except Sunday over N. B. C. network.

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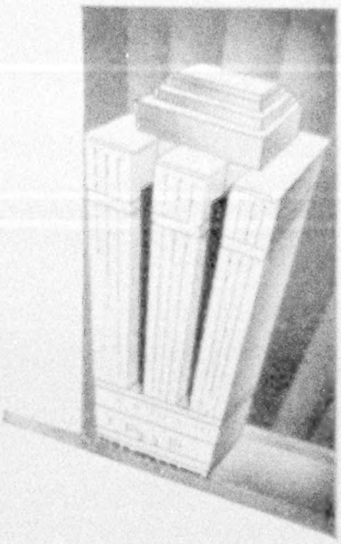

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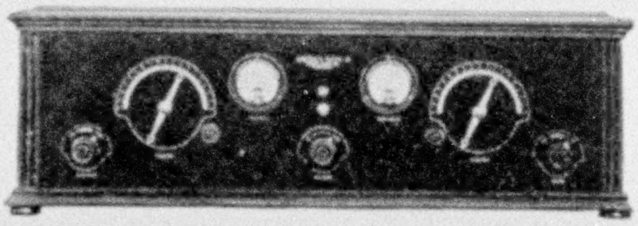

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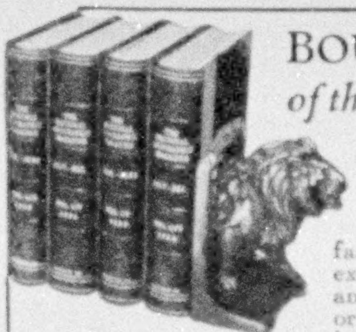

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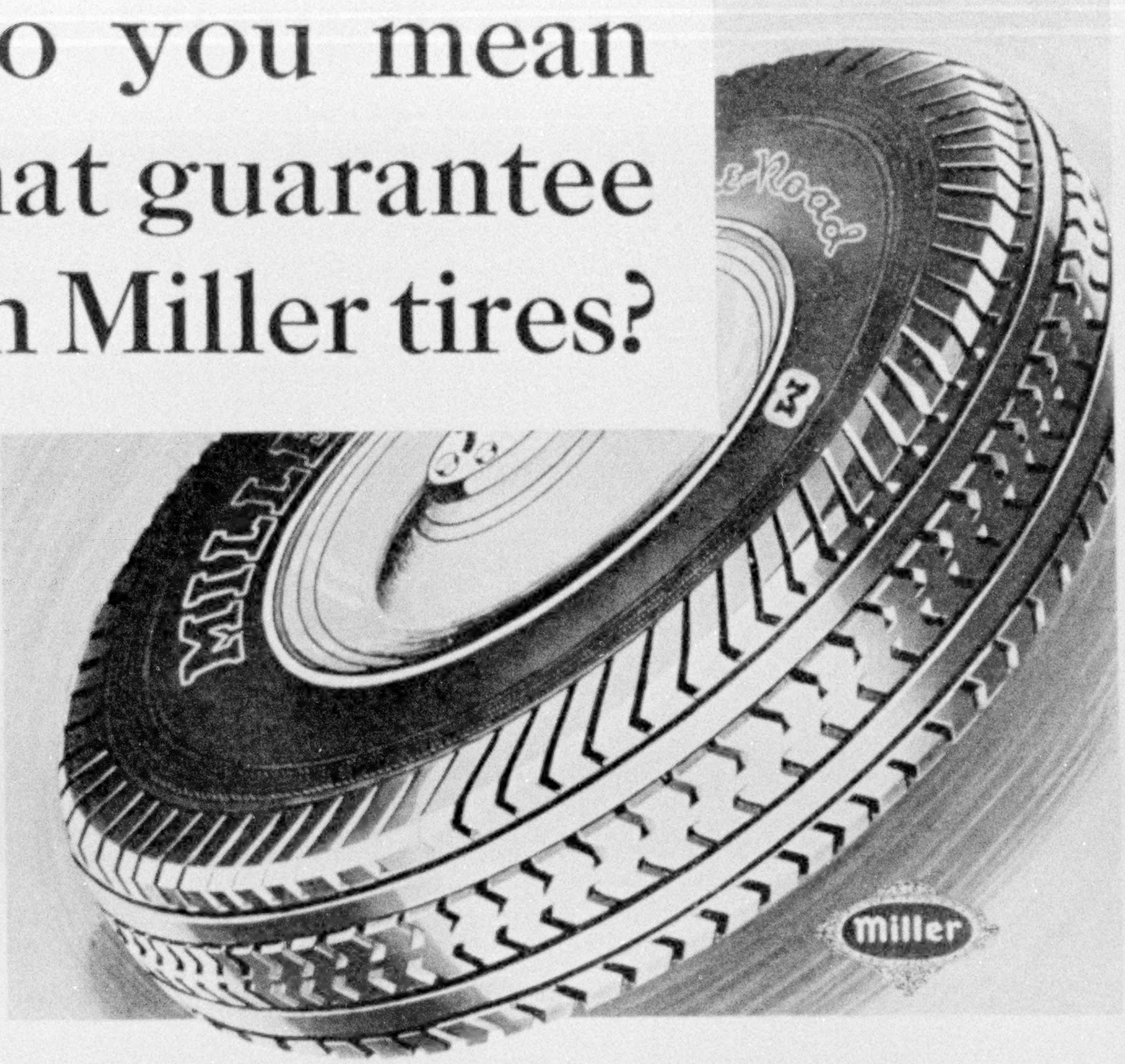
Do you mean that guarantee on Miller tires?



A FEW months ago the tire industry was amazed at the sweeping guarantee announced for Miller Tires. Thousands of motorists read this unsurpassable guarantee and from all sides came this question: *"Do You Mean It?"*

Truth is stranger than fiction, and a tire guarantee that goes all the way and says *"this tire is guaranteed to outwear any other tire of equal price"* is so strange that, to many, it seems incredible. We mean this Miller guarantee. Read it. It assures you that you will get all the tire service it is possible to get for the money you pay. And, isn't this exactly what you want?

This is *guaranteed* to you when you buy Miller Tires. Try as you may, you can find no safer way to buy tires.

Call on your Miller Tire dealer and let him explain why we, and he, can make this daring guarantee on Miller Tires.

GUARANTEE

We guarantee this tire to outwear any other tire of equal price when run under the same conditions.

MILLER RUBBER PRODUCTS COMPANY
(Incorporated)
AKRON, OHIO, U.S.A.

MILLER

TIRES · TUBES · ACCESSORIES AND REPAIR MATERIALS · DRUG SUNDRIES
BATHING WEAR · SHUGLOV FOOTWEAR · RUBBER BALLS AND TOYS · MOLDED RUBBER GOODS

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ADVERTISING messages must have real value to the reader, else they are not admissible to the NATIONAL GEOGRAPHIC MAGAZINE.

Members of the National Geographic Society own The Magazine, and their interests are of first consideration.

THE Geographic takes special pains to investigate new advertising offers. Its representatives interview users, obtain reports from Government sources for standards, or consult authorities before solicitation or acceptance of such advertisements for its pages.

BUT the interests of the reader demand a still higher standard of acceptance.

The Geographic holds that it has no right to waste the reader's time with a mass of advertising that will not be helpful to the purchaser as well as profitable to the advertiser, nor has it the right to offend good taste by publishing cheap or offensive advertising copy.

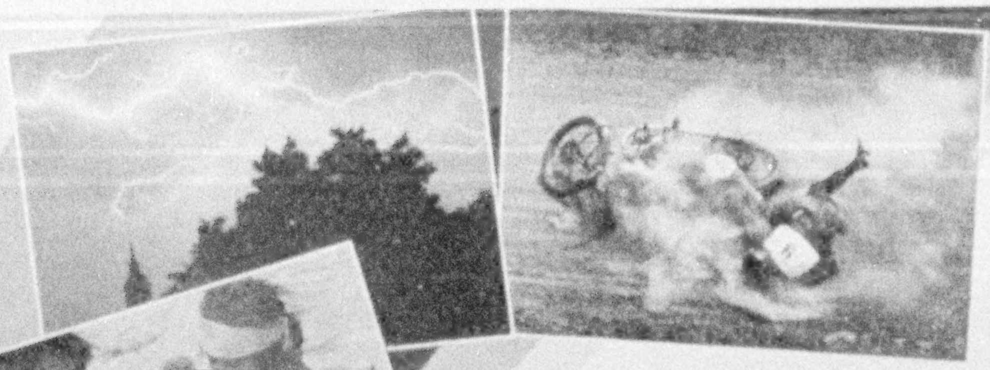
This is not a preachment, but a frank statement.

THIS rigid advertising policy—honesty of offer, high standard of product, its interest and value to the readers—resulting in an extraordinary reader confidence—make for an amazing responsiveness to the advertising messages carried to 1,250,000 homes each month.

The proofs are of record and the endorsement of this sound policy by the great national advertisers is shown by their many years of Geographic use.

THE NATIONAL GEOGRAPHIC MAGAZINE

WASHINGTON, D. C.



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the versatile camera

FOR travel pictures, action and sports pictures, portraits and panoramas, there is no camera like the Leica. Scientists, explorers, professional photographers and amateurs who recognize and demand superlative camera quality—all choose the Leica.

This unusual camera fits the vest pocket or purse, and its highly corrected lens insures clear, sharp negatives under the most adverse conditions of light and weather. A truly fine camera, inexpensive to operate. One roll of cinema film gives 36 pictures, and each picture is capable of perfect enlargement to 12 x 18 inches or more.

See the Leica demonstrated at your photographic supply dealer's, or write for free catalog 1174.

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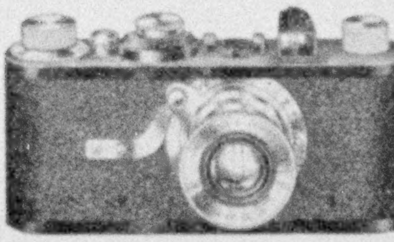
THE Leica

FITS THE VEST POCKET OR PURSE
WEIGHS LESS THAN A POUND



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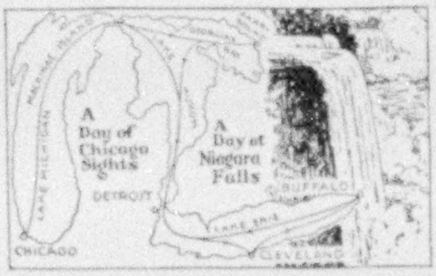

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with a full day at
NIAGARA FALLS

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The Great Oil-Burning White Liners

North American and South American

A trip of over 2000 miles with alluring scenery enroute—new experiences and thrills. Plenty of time allowed at all points of interest to see the sights.

Semi-Weekly Sailings from Chicago, Buffalo, Detroit, Cleveland & Return

Tickets bearing rail routing between Chicago, Buffalo, Detroit and Cleveland will be honored for transit upon additional payment.

These Great Cruising Ships

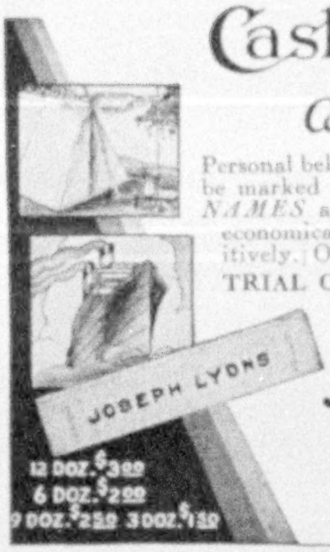
in comfort and luxury are equal to the fine Ocean Liners. Promenade and Sun Decks of unusual width; Large Grand Salon and Lounge Rooms; Canopy Covered Palm Garden. All Staterooms and Parlor Rooms are outside rooms with windows or port holes. Bath and toilet in connection with Parlor Rooms and convenient to all Staterooms. Excellent meals of pleasing variety, daintily served. Plenty of restful nooks for those who seek quiet. For those who enjoy gaiety there are Deck Games, Entertainment, Music and Dancing, with a Social Hostess to look after the Enjoyment of Guests. Open air playground screened in with attendant to amuse the children.

Apply for Blue Book on the Blue Lakes at any R. R. Ticket Office or Tourist Agency or write

Chicago, Duluth & Georgian Bay Transit Co.

W. H. BLACK, Traffic Mgr.
110 W. Adams St., Chicago, Ill.

W. E. BROWN, G. P. A.
13 S. Division St., Buffalo, N. Y.



Cash's Names *for Campers & Travelers*

Personal belongings, wearables, linen *must* be marked when you're away. *CASH'S NAMES* are the neatest, safest, most economical method. They identify positively. Order from your dealer or write.

TRIAL OFFER—Send 10c for one dozen of your own first name woven in fast thread on fine cambric tape.

J. & J. Cash, Inc.

530th Street, So. Norwalk, Conn., or 6409 So. Gramercy Place, Los Angeles, Cal., or 130 Gray Street, Belleville, Ont.

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Regular sailings by palatial oil-burning steamers

ESSEQUIBO and EBRO

All outside staterooms—many with private bath. Verandah cafe. Orchestra. Swimming pool. Deck games.

19 DAY TOURS

HAVANA $300 up PANAMA $300 up

Including sight-seeing and hotels ashore.

PACIFIC LINE

The Pacific Steam Navigation Co., 26 Broadway, N. Y. or your local agent.

10c Packets All Dealers

Moore Push-Pins
Glass Heads • Steel Points, 2 sizes

Decorative Moore Push-Pins
6 Colors, Gilt Decorations, 3 sizes

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The Hanger with the Twist, 4 sizes

To Hang Up Things
without marring woodwork wall paper or plaster

MOORE PUSH-PIN CO.
Philadelphia

Whatever your Question?—whether it concerns the **spelling, pronunciation,** or **meaning** of a word; a fact about a **famous character**, or **historical** event, or **geographical** point; some detail of **science, business, government, literature,** or any other subject, look it up in the "Supreme Authority".

WEBSTER'S NEW INTERNATIONAL DICTIONARY

contains an accurate answer. **452,000** Entries, **2,700** Pages, 12,000 **Biographical** names, 32,000 **Geographical** subjects, 6,000 **Illustrations**, Regular and India Paper Editions. Write for specimen pages, etc., mentioning Geographic to

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DUES

Annual membership in U. S., $3.00; annual membership abroad, $4.00; Canada, $3.50; life membership, $100. Please make remittances payable to the National Geographic Society, and if at a distance remit by New York draft, postal or express order.

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IN THE

NATIONAL GEOGRAPHIC SOCIETY

The Membership Fee, Which is for the Calendar Year, Includes Subscription to the National Geographic Magazine

PLEASE DETACH AND FILL IN BLANK BELOW AND SEND TO THE SECRETARY

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To the Secretary, National Geographic Society,
Sixteenth and M Streets Northwest, Washington, D. C.:

I nominate ....

Occupation ....
(This information is important for the records.)

Address ....

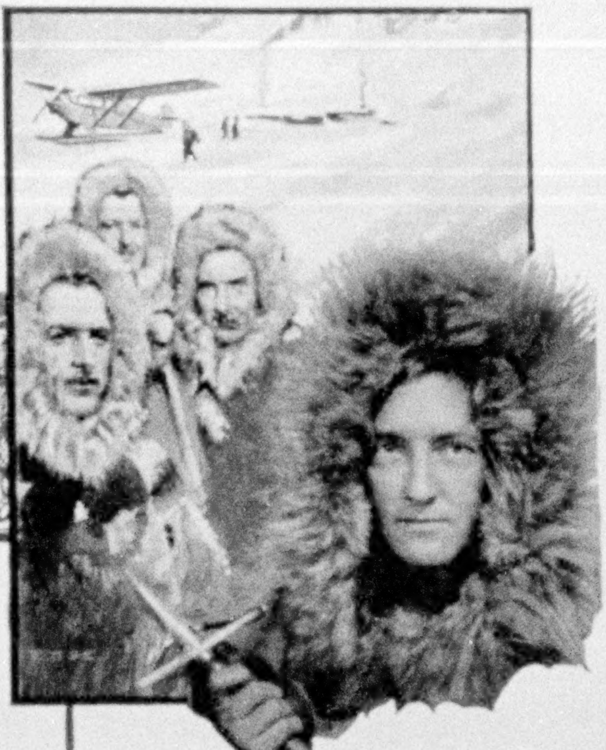
.... *for membership in the Society.*

....

....

7-30 *Name and Address of Nominating Member*

With the BYRD Antarctic Expedition



BYRD ANTARCTIC EXPEDITION
RADIOGRAM
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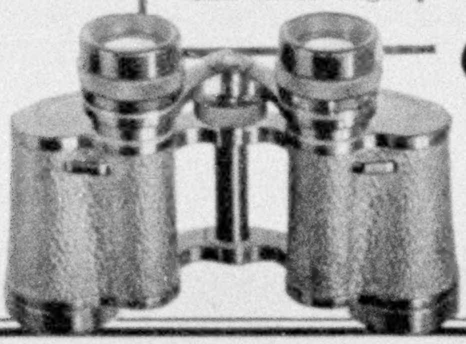
WFA 86BM Little America Antarctica

Carl Zeiss, Inc., New York

Zeiss Binoculars, Cameras and Microscopes giving splendid results under trying conditions. They are a pleasure to use, and their high quality is much appreciated.

CARL ZEISS JENA



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CARL ZEISS, INC., 485 Fifth Avenue, New York
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Travel by special train, steamer and motor...to Yellowstone, the Pacific Northwest, Canadian Rockies, Colorado, Alaska, California. Congenial parties escorted by capable couriers who handle all tickets, reservations, baggage, etc. Tour prices include all necessary expenses. Ask for Booklet "DW".

See Europe luxuriously this summer by motor, at prices unbelievably low. Passion Play and France, Switzerland, Austria, Germany, Belgium, all expenses, $395. Desirable steamship space available in July and August from Montreal, Quebec or New York. Ask for Booklet "E30".

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How to make bequests — *scientifically*

Make your bequests in the form of life insurance and pay the premiums out of current income. Thus you can accomplish your object with three-fold effectiveness. First you have the means of creating the bequest funds. Secondly, you have the certainty that they will reach their destination intact and strictly in accordance with your wishes. Thirdly, the remainder of your estate is undisturbed, so that no loss occurs due to the necessity of transferring funds at any given time.

John Hancock
MUTUAL
LIFE INSURANCE COMPANY
OF BOSTON, MASSACHUSETTS

INQUIRY BUREAU 197 Clarendon St., Boston, Mass.
Please send booklet,
"This Matter of Success"

Name...

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Over Sixty-Seven Years in Business

VACATIONS ALOFT

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MAKE history for your diary in America's oldest capital . . . the charming land where Montezuma ruled. 7,000 feet in the air . . . with a mean temperature of 70° all year round . . . Mexico City promises a comfortable and enjoyable vacation.

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All Expenses to Mexico City and Return

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Write, wire or telephone for illustrated booklet, information or reservations.

WARD LINE

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Also All Authorized Tourist Agencies

AGWI LINES

★ ★ ★ ★

This Single Key

opens handily to you the treasure of facts, pictures and maps hidden in any back issue of the

NATIONAL
GEOGRAPHIC
MAGAZINE

Fully cross-referenced, it locates without waste of time the half remembered article and the forgotten details. Useful in planning a trip or a talk. With this index, the newspaper reader can refer instantly to graphic descriptions of places mentioned. The school child or student and the reader for pleasure and knowledge find it a constant aid.

CUMULATIVE
INDEX

..........................1930

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Washington, D. C.

Please send me...... copies of the Cumulative Index with latest supplement, for which I enclose $..........*

Name..

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*$2 per copy. Postpaid in U. S. A. and Canada; mailing elsewhere, 25 cents

LAND OF CEREMONY

THE TEA CEREMONY—INTRODUCED BY THE SHOGUN ASHIKAGA YOSHIMASA

THE visitor to Old Japan is always delighted with the gracious ceremonies to which even the simplest acts are elevated. How perfectly this artistic reverence prepares one for the wonders of the Blossom Empire—its mirror lakes and painted valleys, the centuries-old craftsmanship, all the ancient loveliness of shrines and temples.

Most pleasantly surprising is the existence side by side with these ancient beauties of the modern miracles of traveling comfort and convenience. Swift, super-luxury express trains whisk the traveler from city to city. Large, modern hotels await him everywhere with all the familiar facilities and services. Automobiles spin into the remotest sections. Even the favorite sports are amply provided for—golf, tennis, baseball, riding or flying.

The Japan Tourist Bureau (a non-commercial organization) maintains an office in New York in addition to widespread facilities in Japan for the special service of visitors. It will be honored to help plan your itinerary, arrange all the details of accommodations, and serve you while in Japan, without additional cost. It will make your visit to "The All Year Paradise" an unforgettable experience.

The wonderlands of Japan, Korea, Manchuria and China are reached from the United States and Canada by the Nippon Yusen Kaisha, Osaka Shosen Kaisha, the American Mail Line, Canadian Pacific and the Dollar Steamship Line. Full information will be furnished by any of these Lines, any tourist agency, or by the Japan Tourist Bureau.

JAPAN
TOURIST BUREAU
c/o Japanese Gov't Rys., One Madison Ave., N. Y. C.
c/o Nippon Yusen Kaisha, 545 Fifth Ave., N. Y. C.

240 thousand stockholders own General Motors

THE intensive sale of Liberty Bonds a decade ago created hundreds of thousands of new security owners. These people became more interested in the financial sections of newspapers. They became familiar with financial terminology and, once accustomed to the receipt of income from investments, developed a normal and wholesome appetite for more.

At the same time a number of major corporations, recognizing the public's increased interest, instituted a policy of greater frankness. Among these corporations General Motors was a leader.

For ten years General Motors has published not only its annual and quarterly earnings but also each month exactly how many cars have been sold to the dealers and delivered by them to the public; as well as current news regarding its overseas operations, its investments in allied industries, and all other developments of importance. No direct effort has been made to secure a wider distribution of securities among investors, yet the number of stockholders rose steadily from less than 2000 in 1917 to more than 71,000 in 1928.

During 1929 the increase was especially marked. There were 125 thousand in June and 140 thousand in November. Today their number has reached a total of more than 240 thousand—a gain of 115 thousand in the past twelve months.

General Motors believes that the soundness of American prosperity is aided by widespread public ownership of the larger industries, and is gratified to be one of the very few corporations in which nearly a quarter of a million Americans have indicated their faith by the investment of their savings.

GM GENERAL MOTORS

GENERAL MOTORS

"A CAR FOR EVERY PURSE AND PURPOSE"

CHEVROLET · PONTIAC · OLDSMOBILE · MARQUETTE · OAKLAND
VIKING · BUICK · LaSALLE · CADILLAC · ALL WITH BODY BY FISHER

General Motors Trucks · Yellow Coaches and Yellow Cabs
Frigidaire—the automatic refrigerator
Delco-Light, DL water systems and delcogas
General Motors Radio · GMAC plan of credit purchase

Two New Hoovers!

Great increase in efficiency
No increase in price

Model 725 is the finest electric cleaner ever built, 25% more efficient than any previous Hoover. Model 575, though selling at a popular price, yet is more efficient than any other make of cleaner *at any price*

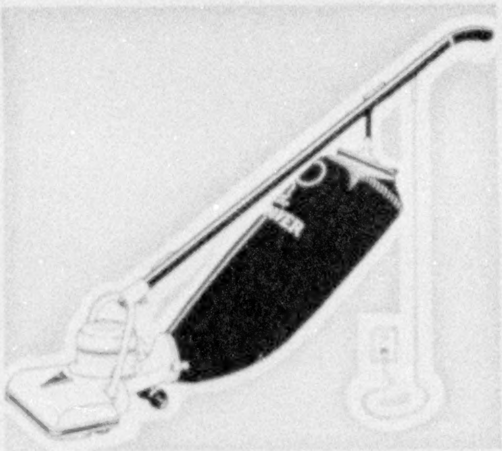
WHO *would think of washing the windows* "RATHER CLEAN"

WINDOWS need to be completely clean to look well. So do rugs and carpets.

If dirt is packed deep in the rug, the colors are dulled and the rug's beauty marred. Worse than that, the rug is being worn out by the cutting action of the embedded grit.

Beating is the only way to get out this deep-packed, destructive grit. Only The Hoover offers the beating action of Positive Agitation. Because Positive Agitation gets out buried dirt, The Hoover keeps any rug looking its best, with colors bright and nap smoothed. But better still, The Hoover removes the most *dirt per minute* and does it with the least expenditure of time and energy on your part.

Ask your Hoover dealer for a free trial or home demonstration of The Hoover and its efficient dusting tools. Two Hoover models, only $6.25 down; balance monthly. Liberal allowance for your old cleaner.



HOOVER

IT BEATS...AS IT SWEEPS...AS IT CLEANS
ON A CUSHION OF AIR

THE HOOVER COMPANY
North Canton, Ohio

The oldest and largest maker of electric cleaners

The Hoover is also made in Canada, at Hamilton, Ontario

MORE DIRT DPM PER MINUTE

© 1930, The Hoover Co.

PRESS OF JUDD & DETWEILER, INC.
WASHINGTON, D. C.

A Special Exhibition

Of Home Movies in *Full Color* at Ciné-Kodak Dealers' Now · See Them

Home Movies that reproduce on the screen Every Color the Eye Can See... as easy to take as Snapshots

Kodacolor Home Movies in color made with Ciné-Kodak are the greatest single triumph in the history of photography.

WHAT about Home Movies in color? Are they hard to make? Can *you* make them? What do you do to get them?

Go today to your nearest Ciné-Kodak dealer and see them—amateur-taken movies in *full color!*

Typical films in full color are now on exhibition daily at Ciné-Kodak dealers' throughout the United States and Canada. To see these wonderful pictures is truly a revelation.

Easy as Snapshots!

You take them as easily as the ordinary snapshot.

They reproduce, exactly and unerringly, *every color the eye sees*, precisely as those colors are.

You catch your breath at the wonder of it. Before your eyes, on the screen, is everything you saw through the finder of the camera—not only every slightest motion, but every shade of every color.

That means your children *exactly* as they are now—your mother just as she is today. Scenes from your travels. How precious to keep through the years!

Movies that are life itself. *For color and motion are the two things that really picture life.*

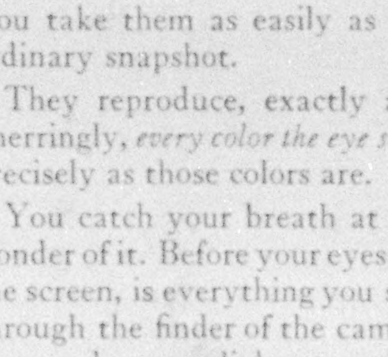
Now, both are combined in the most amazing of all developments in Home Movies. Movies that are closer to life than anything known before. Yet so simple that a child can take them.

The same Ciné-Kodak (B or BB, *f*.1.9) that takes black-and-white movies takes color. The same Kodascope (A or B) that shows black-and-white movies shows color. You simply use a Kodacolor Filter and Kodacolor Film when making or projecting movies in color.

If you can look through a finder and press a lever you can take these amazingly beautiful pictures. Then send the film to any Eastman processing station. In a few days it comes back to you, ready for projection . . . *at no additional cost;* the charge for developing is included in the price of the film.

Everything is so convenient, so easy. And, if you can afford even the smaller nice things of today, you can afford the Ciné-Kodak.

See what wonders are now offered you by the same Eastman men who so simplified photography that any child can make snapshots. See the exhibition of Kodacolor that is being presented this month by Ciné-Kodak dealers. Visit your dealer today. Eastman Kodak Company, Rochester, N. Y.



Ciné-Kodak Model BB, *f*.1.9

KODACOLOR

HOME MOVIES IN FULL COLOR